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Criticism in the History of Science: Newton on Absolute Space, Time, and Motion, I
Stephen Toulmin 1

An Interpretation of Classes as Physical Wholes
Michel E. Quihillalt 30

Aesthetic Vision ..... *Vincent Tomas* 52

Hobbes's Concept of Obligation ... *Thomas Nagel* 68

On Knowing ..... *Douglas Arner* 84

History, the Individual, and Inevitability
John Passmore 93

Liberalism in Greek Politics ..... *J. A. O. Larsen* 103

Reviews 110

Books Received 135

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CRITICISM IN THE HISTORY OF SCIENCE: NEWTON ON ABSOLUTE SPACE, TIME, AND MOTION, I

IN looking back at the scientific ideas of the past how critical can we afford to be? Are we entitled to sit in judgment on our great scientific predecessors and to award them good or not-so-good marks for their achievements; or should we rather adopt an aesthetic approach, limit ourselves to the sensitive reconstruction and appreciation of their ideas, and, having pieced together (like some antique vase) the thoughts of a Kepler, a Boyle or a Cuvier, pass reverently on to the next Old Master?

There is here, at any rate on the surface, a conflict of interests between the historian and the philosopher. To the historically minded the second, aesthetic approach has great attractions. For those who presume to judge, criticize, assess, run great risks of anachronism. It is so easy, for example, to write off Aristotle's *Physics* as a failed attempt at producing Newton's *Principia*[1] and to allow the changes in style which have affected

[1] The major part of Aristotle's discussion of locomotion in the *Physics* consists of conceptual analysis rather than of physical representation and explanation: he is concerned to show that his notions are logically coherent, not that they "save the phenomena"—hence, among other things, his long discussion of Zeno's paradoxes. One short chapter (VII, v; 249b 27-250b 7) contains something which at first sight resembles modern kinematics, and on this passage is based the idea that for Aristotle force was proportional to velocity. But two things should be noted: (a) so far from formulating any mathematical function or equation relating force and velocity, Aristotle does not even employ any word for "speed" or "velocity," and his word "δύναμις" can only very dubiously be rendered as "force"; and (b) since he is talking about steady-state motion against resistances, the law which his discussion foreshadows is not Galileo's principle of inertia but Stokes's law, viz., that the terminal velocity of a body moving through a resisting medium is proportional to the force propelling the body and inversely proportional to the viscosity of the medium. From his examples, which have to do with gangs of men shifting boats and the like, it seems that he would best be translated (e.g.): "If a given effort is needed to shift a load so far in such a time (and half as far in half the time), then half the strength will shift half the load the same distance in the same time" (250a 5-7). Neither Sir Thomas Heath (*Mathematics in Aristotle*, Oxford, 1949, pp. 143-146) nor I. E. Drabkin (*A Source-Book of Greek Science*,

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physical thought in the last century to blind one to the solid merits of the caloric theory;[2] or alternatively to find in some early, passing speculation about, say, "atoms" merits, insight, even prevision, of a kind which are simply not there.[3] Critical anachronism of this kind is, it seems, as much of a danger as that grosser sort which finds in Anaximander, for example, the doctrine that "living things had arisen from inorganic matter."[4] And some would argue that we can hope to avoid this danger only if we remain scrupulously neutral and are content to discover and depict the ideas of earlier scientists as faithfully as we can, without attempting to award marks, to pass judgment, or to give (at any rate in our own terms) a critical assessment of their achievements.

The philosopher of science, on the other hand, finds it hard to renounce so completely his critical ambitions. For his aim is to understand the nature of the scientist's inquiries and to refine his critical categories by comparison with the great exemplars of scientific theory. He must not, it is true, let his philosophical prejudices do violence to historical justice by demanding of all

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New York, 1948, pp. 203-204, and *American Journal of Philology*, LIX [1938], 60-84) avoids entirely the anachronism of looking for functional relations of a modern kind in Aristotle's *Physics*. (I have had valuable discussions with Mr. G. E. L. Owen about this point.)

[2] The change-over to the kinetic theory of matter did result in one striking theoretical economy, since thermal phenomena could now be explained in terms of the properties, not of a duplicate matter existing alongside (or within) the ponderable matter of gravitational theory, but of the very same matter and its motions. But it did not at once lead to the explanation of many new phenomena for which the caloric theory was unable to account. Certainly Rumford's cannon-boring experiment was not crucial against the caloric theory. Much of the heat-theory of the early nineteenth century could in fact be rewritten simply in the new idiom, "caloric-flow" being replaced by "energy-flow," notably Carnot's proof of the Second Law of Thermodynamics.

[3] For the Greek philosophers, atomic theories were attractive for logical or epistemological reasons as often as for scientific ones: the modern counterpart would be Russell's "logical atomism," for which see "The Philosophy of Logical Atomism" (1918), reprinted in *Logic and Knowledge* (London, 1956) and discussed by J. O. Urmson in *Philosophical Analysis* (Oxford, 1956). F. M. Cornford was particularly severe on the idea that Epicurus was a scientist in the modern sense of the term: cf. *Principium Sapientiae* (Cambridge, 1952), esp. pp. 26-28.

[4] Thus S. F. Mason, *A History of the Sciences* (London, 1953), p. 15.

theories, say, that axiomatic structure which few but Euclid's and Newton's ever quite achieved.[5] Still, his very attempt to interpret and analyze the scientist's role in our intellectual economy will carry with it criteria of success or failure and will lead him to look in every theory or notion, present or past, for the merits characteristic (on his view) of a fruitful scientific idea. If the merits he chooses to look for are not the appropriate ones, so much the worse for him; but if his conception of science is anything like adequate, it will find a place of honor for the great theories of the past, and will do something to indicate what in them deserved to last and why the remainder did not succeed in the struggle for survival between theories.[6]

The philosopher may even wonder whether the historian's ideal of neutrality can in fact be achieved, to say nothing of being desirable. Can one give an account of any scientific development without being committed to some standards of what is good or bad in science? Is not the historian of scientific ideas bound to have his views about the aims and functions of scientific inquiry and to select and order his quotations—to say no more—in accordance with these ideas? The historico-aesthetic approach has, in any event, dangers of its own as grave as those of anachronism. For suppose one does make the attempt at neutrality, and resolutely refrains from asking what in the writings of a scientist of the past was good science, what was bad science, and what was not science at all. One is then in danger of overlooking in the scientist one is studying logical or philosophical distinctions vital to an understanding of his work. Let our historical inquiries be just, let them avoid reading into earlier theories scientific distinctions which grew up only later; but that does not mean

[5] Whole-hearted acceptance of the "hypothetico-deductive" account of scientific theories carries with it always this temptation. Cf. R. B. Braithwaite, *Scientific Explanation* (Cambridge, 1953); and the various works of J. H. Woodger, which illustrate both the virtues and the limitations of the "axiomatic method."

[6] As contrasted with (e.g.) Rudolf Carnap, who regards the fact that one cannot apply his "inductive logic" to sophisticated theories in physics as a sign that these theories have not been completely and exactly formulated "according to the rigorous standards of modern logic." See *Logical Foundations of Probability* (Chicago, 1950), pp. 242 ff.

they should be critically naive, or Laodicean, or unphilosophical. By all means let us understand how past ideas looked to those who held them; but if we are now in a position to see more clearly, in retrospect, the effective scope and character of a doctrine or the cross-purposes underlying a dispute, we need not, surely, in our pursuit of historical purity and fidelity, deprive ourselves of the benefits of this clearer vision. To import onto the stage of fourteenth-century dynamics characters from twentieth-century relativity theory would indeed be an anachronism, but there is no reason why we should not from time to time view that stage through twentieth-century opera glasses.

I

These reflections on method will be illustrated here by a re-examination of the notion of absolute space as it appears in Newton's *Principia mathematica philosophiae naturalis.*[7] One needs almost to apologize for adding to the literature on Newton. But he is such a key figure in the development of modern science that his ideas must always be kept in the sharpest focus; his theories set the pattern for physical science for two centuries, and provide the philosopher of science with a touchstone for testing his ideas; and a man who appears at first sight so complex a mixture of the keen-sighted natural scientist and the naif philosophical theologian presents historian and philosopher alike with delicate and fascinating problems. It is therefore no wonder that he has been the object of so much attention and that his ideas have attracted commentators of every sort from the ax-grinding to the over-sympathetic.

In any case we are only now sufficiently far from his mountainous achievements to see them in proportion—at a Darjeeling to his Everest, so to speak. During the eighteenth and nineteenth centuries "Newton" became a sort of lay-figure, personifying that cool scientific reason which the Enlightenment esteemed and the Romantics—notably Blake[8]—reacted against; Sir Isaac the

[7] This will be cited in the edition by Florian Cajori (Berkeley, 1934) and abbreviated as *Princ.*

[8] There is a famous engraving by Blake called "Newton," and several of

man remained only a shadow. Then, after two hundred years, the temper changed. In physics many of his ideas have been amended if not entirely superseded; on the logical front his theories have been subjected by Mach to a rigorous criticism, some of it (I shall argue) quite anachronistic.[9] And those historians who have at last looked behind the traditional figure to the man found him, not surprisingly, more a creature of his time and an introverted personality, and less a universal, time-transcending, all-rational genius than he had earlier been painted. During the last half-century, therefore, historians have tended increasingly to emphasize the less rational side of his mind. Maynard Keynes declared that he was not "the first of the age of reason" but "the last of the magicians";[10] A. J. Snow has explored the background of his thought in Jacob Boehme and other mystical writers;[11] his Rosicrucian connections have been pointed oút;[12] his work on chemistry has been so presented as to imply that he was a Faust rather than a Boyle in his methods, his interest in alchemical writings being cited as a proof of this;[13] Hélène Metzger followed out the influence on eighteenth-century natural theology in Britain of his idea of universal attraction;[14]

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his writings refer scathingly to the great mathematician. Goethe's dislike of Newton's theory of color is also well-known.

[9] I use the fifth edition of the translation by T. J. McCormack of *Die Mechanik in ihrer Entwicklung* (Leipzig, 1883) published as *The Science of Mechanics* (Chicago and London, 1942).

[10] J. M. Keynes, "Newton the Man" in *The Royal Society: Newton Tercentenary Celebrations* (Cambridge, 1947), esp. pp. 28-29.

[11] A. J. Snow, *Matter and Gravity in Newton's Physical Philosophy* (London, 1926).

[12] Most recently by E. N. da C. Andrade, *Sir Isaac Newton* (London, 1954), p. 128.

[13] Though anybody undertaking a serious experimental study of chemical phenomena in the middle of the seventeenth century would have been ill-advised to ignore the alchemical tradition. The work of Holmyard, Kraus, Stapleton, and others has made it clear how far the Islamic alchemists were the forerunners as much of the medieval Western metallurgists as of the more fanciful "adepts." How far Newton read his alchemists for their practical experience, how far with cloudier hopes and visions, we shall not know until his chemical papers have been published and evaluated. For a sample, see F. Sherwood Taylor's paper in *Ambix*, V (1956), 59-84.

[14] H. Metzger, *Attraction universelle et religion naturelle chez quelques commentateurs Anglais de Newton* (Paris, 1938).

while E. A. Burtt's famous book on *The Metaphysical Foundations of Modern Science* both helped to establish the general tendency by its very title, which implied a closer relation between science and metaphysics than the nineteenth century had acknowledged, and at the same time brought to light certain resemblances between the theology of the Cambridge Platonists, notably Henry More, and Newton's own general system of ideas.[15]

Most recently M. Alexandre Koyré has filled in the shading of the new picture in his book *From the Closed World to the Infinite Universe*;[16] indeed, he has gone rather further than most of his forerunners thought to do. To Henry More and Joseph Raphson it seemed that Space must be one aspect of the Deity, namely, His immensity; both God and Space were (they argued) infinite, eternal, incorporeal, and immutable, and it was not to be supposed that the Universe could harbor two separate, independent, and distinct entities having all these characteristics in common.[17] More was an older contemporary of Newton's at Cambridge, Raphson a younger mathematician and disciple. Newton's own teachings about absolute space and time were already being labelled "metaphysical" by Mach at the end of the nineteenth century.[18] Koyré therefore concludes that Newton's Space and More's are identical, so that in putting forward his notion of "absolute, true, mathematical duration and space" Newton was arguing on behalf of the selfsame concepts for which Henry More fought his long-drawn-out and relentless battle against Descartes.[19] This last touch, though new, only rounds off the current picture of Newton's views, completing what since Mach and Einstein has become the received doctrine on the subject of Newtonian space and time.

Yet by this time—and this will be my main thesis—the reaction has been overdone. The twentieth-century picture of Newton-Faust is becoming by now as exaggerated as the earlier one of

[15] E. A. Burtt, *The Metaphysical Foundations of Modern Physical Science* (New York, 1926; rev. ed. London, 1932).

[16] A. Koyré, *From the Closed World to the Infinite Universe* (Baltimore, 1957). Cited below as "Koyré."

[17] See Koyré, chs. vi, viii.

[18] *The Science of Mechanics*, pp. 271 ff.

[19] Koyré, p. 160.

Newton-Logos: this can be shown if we reconsider the current doctrine about absolute space. So in what follows I shall first isolate three main strands in this received doctrine and then go on to compare them with Newton's own formal pronouncements on the subject of absolute and relative space. Neither the views current today nor Leibniz's and Mach's earlier criticisms (I shall conclude) go to the heart of Newton's distinction. Far from anticipating Einstein's theory of relativity, Leibniz's attack on Newtonian space never came to grips with the astrophysical problems Newton actually solved. As for Koyré's identification of Newton's doctrines with Henry More's, it is by their effective scientific fruits that these doctrines must primarily be assessed, rather than by their supposed metaphysical foundations. These fruits have, since Mach, been underestimated; and whatever the historical origins of Newton's ideas, however suggestive or sympathetic he may have found Henry More's theological bizarreries, it is far too strong—if not indeed a sheer category-mistake—to say that "Newton's physics . . . stands or fall with"[20] the substantial or spiritual Space of the seventeenth-century Neoplatonist theologians.

The received interpretation of Newton's views on space, time, and motion has, then, three chief strands which need to be considered separately.

(i) According to the first proposition, time, space, place, and motion should not (on Newton's account) be referred to any material objects of reference, but are to be measured "absolutely." About the positive content of this proposition there are several views. Newton can be taken as asserting that spatial and temporal magnitudes are intrinsic qualities rather than relations,[21] to be measured independently of any reference-system. Mach adopts this interpretation and understandably objects to it as vacuous.

A motion is termed uniform in which equal increments of space described correspond to equal increments of space described by some

[20] Koyré, p. 160.

[21] Cf. C. D. Broad, "Leibniz's Last Controversy with the Newtonians," in *Ethics and the History of Philosophy* (London, 1952), pp. 168-191.

motion with which we form a comparison, as the rotation of the earth. A motion may, with respect to another motion, be uniform. But the question whether a motion is *in itself* uniform, is senseless. With just as little justice, also, may we speak of an "absolute time"—*of a time independent of* change. This absolute time can be measured by comparison with no motion; it has therefore neither a practical nor a scientific value; and no one is justified in saying that he knows aught about it. It is an idle metaphysical conception.[22]

Alternatively, Newton can be taken as believing in the existence of a fundamental frame of reference in nature, something not consisting of material objects but having nevertheless an "objective existence"[23] of a nonmaterial or immaterial character, this frame of reference being either unobservable in principle—a possibility to which Newton's own words lend some authority[24]—or identified with an all-permeating ether. This last alternative was much favored around the turn of the twentieth century and is still occasionally to be met with; from it there arises the idea that Einstein's principle of relativity, in disposing of the "luminiferous ether," thereby drove the last nails into the coffin of Newton's "absolute space."[25] But whatever positive meaning is read into this first proposition, it is always taken to be denying the same thing: namely, that time, place, space, and motion can, fundamentally, be referred to any *material* frame of reference. "Curiously enough," says Koyré, "the Cartesian conception of the only relative, or relational, character of these and connected notions is branded by Newton as being 'vulgar' and based upon 'prejudices.' "[26]

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[22] *The Science of Mechanics*, pp. 273-274.

[23] Cf. H. Poincaré, *Science and Hypothesis*, ch. vii (London, 1905), p. 117.

[24] "But because the parts of space cannot be seen, or distinguished from one another by our senses . . . ," *Princ.*, p. 8.

[25] See, most recently, M. Jammer, *Concepts of Space* (Harvard, 1954), p. 171: "Thus Newton's conception of absolute space and its equivalent, Lorentz's ether, were shorn of their ability to define a reference system for the measurement of velocities. This was accomplished by the special theory of relativity." Sir Edmund Whittaker, on the other hand, makes it clear in his *History of the Theories of Aether and Electricity*, II (Edinburgh, 1953), 27-28, that the question of the luminiferous ether only became identified with that of absolute space during the nineteenth century.

[26] Koyré, p. 160.

(ii) The second proposition in the received doctrine concerns the reality of Newton's "absolute," nonmaterial reference-system. Henry More and Joseph Raphson both insisted, for theological reasons, on the "real existence" of Space as distinct from all material things. "Indeed," writes More, "we are unable not to conceive that a certain immobile extension pervading everything in infinity has always existed and will exist in all eternity . . . really distinct from matter."[27] Poincaré, again, takes it for granted that absolute space must be something having an "objective existence," and textbooks of physics to this day refer to the notion as that of a "cosmic substratum."[28] Their authors, it is true, do not know whether to apologize for or congratulate Newton on the use he makes of the notion: on the one hand, says Joos, absolute space and absolute time are clearly unnecessary fictions, yet on the other hand

> the fact that Newton was able to formulate a thoroughly adequate foundation for the mechanics of macroscopic bodies by introducing these two concepts, whose difficulties could scarcely have escaped his notice, is to be regarded as an outstanding stroke of genius.[29]

Still, it would be odd if the only way of constructing a satisfactory theory of dynamics had ever been to make a pair of assumptions as gratuitous and nonfunctional. So perhaps our doubts should be less about Newton's theory than about this way of interpreting it.

(iii) The third element in the received doctrine calling for comment has to do with the historical background of relativity theory. According to this, Newton's contemporaries—notably Berkeley, Huygens, and Leibniz—saw at once that the soundness

[27] *Enchiridium metaphysicum* (London, 1671), p. 68; quoted in Koyré, p. 146.

[28] G. Joos, *Theoretical Physics* (London, 1934), p. 216.

[29] Joos, *op. cit.*, p. 217. Notice that the whole sentence is italicized by the author, and cf. Jammer (*op. cit.*, p. 171) who writes, "Space as conceived by Newton proved to be an illusion, although for practical purposes a very fruitful illusion—indeed, so fruitful that the concepts of absolute space and absolute time will ever remain the background of our daily experience." This last remark increases the confusion, since it construes not only Newtonian dynamics but our everyday nontheoretical ideas also as involving a "metaphysical illusion."

of his theory depended on that of its "metaphysical foundations." These foundations, they argued, were essentially defective, and the objections they put forward on metaphysical and theological grounds foreshadowed those which Einstein was in due course to press home, when the time came for him to dethrone Newton's theory within physics itself.[30]

II

How far do these three propositions fairly represent Newton's conception of absolute space? Enough support can be found in his writings to account for their currency, especially if we cast our net wide and bring in as evidence the more general and informal remarks of his later life, as well as passages which were frankly theological. Yet we should be on our guard and examine not only Newton's words but also his deeds; the use, that is, that he makes of the notion of absolute space in the dynamical system of the *Principia*. And we should beware of taking too much at their face value the things a man says either about his method (knowing "the difference—in science—between what men say and what men do"[31]) or about the theological implications of his theories. We can judge the received doctrine truly only if we concentrate our attention on the key passage near the beginning of the *Principia* where the distinction between absolute and relative space is first introduced, and—bearing in mind the scientific problems Newton was tackling—see whether this passage happily bears the interpretation commonly placed on it.[32] In my view, none of the three propositions I have stated will stand up to a scrutiny of this kind; and an alternative, happier reading of Newton's famous scholium can be given, which fits much better his explanatory practice and must take its place in any fair and comprehensive account of his views.

The scholium on space, time, and motion follows immediately after eight "definitions":[33] apart from these, it is the first thing

[30] Koyré, chs. x and xi, pp. 221-272; Jammer, *op. cit.*, pp. 111-124.
[31] I. B. Cohen, *Franklin and Newton* (Philadelphia, 1956), p. 47.
[32] The passage in question is the scholium, *Princ.*, pp. 6-12.
[33] *Princ.*, pp. 1-6.

in the treatise, and (what should be noted) precedes the "Axioms, or Laws of Motion" with which the formal exposition of Newton's mathematical theory begins.[34] In the initial definitions Newton has been introducing the technical terms of his theory—quantity of matter and motion, innate, impressed, and centripetal force, and the various quantities (absolute, accelerative, and motive) of a centripetal force. These terms are all dynamical terms of art, even when not of Newton's own coining, so that he is bound to indicate how they are going to be used within the treatise which follows. But when he goes on to explain his spatial and temporal terms, the situation is different: these terms are familiar to all and there is accordingly no place for formal definitions.

> Hitherto I have laid down the definitions of such words as are less known, and explained the sense in which I would have them understood in the following discourse. I do not define time, space, place, and motion, as being well known to all.[35]

Nevertheless the use which he is going to make of these terms has certain special features, which marks it off from their common use, so that he must add an explanation:

> Only I must observe, that the common people conceive those qualities under no other notions but from the relation they bear to sensible objects. And thence arise certain prejudices, for the removing of which it will be convenient to distinguish them into absolute and relative, true and apparent, mathematical and common.[36]

So far the only thing calling for comment is the allusion to "the common people." This Koyré takes to be scornful: the "relational character of the Cartesian conception of space and time is branded by Newton as being 'vulgar' and as based upon 'prejudices.' "[37] Yet surely the Descartes scholar is taking premature offense. Even if it were in Newton's character to be contemptuous of the populace, this would be an odd context in which to evince his feelings, and there is in any case no need to read his words in that sense. For, in the first place, phrases like

[34] *Princ.*, pp. 13-28.
[35] *Princ.*, p. 6.
[36] *Ibid.*
[37] Koyré, p. 160.

"the common people" or "the vulgar" have become much more derogatory by now than they were in Newton's time: Berkeley, for example, in a well-known remark about the philosopher "speaking with the vulgar but thinking with the learned" clearly meant no more than "ordinary, unphilosophical people."[38] Nor does Newton in fact say that the ordinary man's use of the terms is *based upon* prejudices, but rather that it is liable to *give rise to* them: that is, that a man who is familiar only with the nontechnical use of spatial and temporal notions will be liable to misunderstand (prejudge) the specialized use of these terms in dynamics, unless he is warned how this technical use departs from the one with which he is familiar. Indeed it is for this very purpose—to mark off the special character of the use he will be making of these terms in his dynamical theory—that he goes on "to distinguish them into absolute and relative, true and apparent, mathematical and common."

The wording of his distinctions has often been quoted:

> I. Absolute, true, and mathematical time, of itself, and from its own nature, flows equably without relation to anything external, and by another name is called duration: relative, apparent, and common time, is some sensible and external (whether accurate or unequable) measure of duration by the means of motion, which is commonly used instead of true time; such as an hour, a day, a month, a year.
>
> II. Absolute space, in its own nature, without relation to anything external, remains always similar and immovable. Relative space is some movable dimension or measure of the absolute spaces; which our senses determine by its position to bodies; and which is vulgarly taken for immovable space; such is the dimension of a subterraneous, an aerial, or celestial space, determined by its position in respect of the earth. . . .[39]

Commentators on these distinctions and on the rest of the scholium which follows have tended to fasten on the more obscure and metaphysical-seeming statements as revealing the drift of Newton's thought at this stage. Newton talks, it is true, in several

[38] George Berkeley, *Principles of Human Knowledge*, par. 51.
[39] *Princ.*, p. 6.

places in the scholium as though space and time could have parts in just the same way as material things, with the sole difference that, if we "suppose those parts to be moved out of their places, and they will be moved . . . out of themselves. For times and spaces are . . . the places as well of themselves as of all other things."[40] And this has given force to the suggestion that, for him, absolute space and absolute time were extra, quasi-material constituents of the universe. But two things should make us look more closely at the distinctions. In the first place, Newton himself betrays obvious discomfort at the idioms to which he finds himself resorting in order to convey his meaning: "suppose those parts to be moved out of their places, and they will be moved *(if the expression may be allowed)* out of themselves. For times and spaces are, *as it were*, the places as well of themselves as of all other things." This by itself raises the doubt whether we should put too much weight on the remarks in question. The other point is, if possible, even more obvious: it is that for Newton the contrast between "absolute" and "relative" time, space, place, and motion is one and the same as that between "mathematical" and "sensible." Our next task is to explore the implications of this identity.

What can be the force of distinguishing, in this context, between a "mathematical" and a "sensible" use of spatial and temporal terms? In what respects is Newton's theory so novel that it is liable—unless this distinction is constantly borne in mind—to create misunderstandings or "prejudices"? In answering these questions we have two guides: first, our own knowledge of the history of dynamics and of the logical structure of scientific theories (both of them subjects which have been much clarified since Newton's time), and, second, the things Newton himself says in the Preface to the first edition of the *Principia* about the analogous mathematical character of geometry.[41] Taken together, these things focus attention on the chief and deliberate originality in logical structure which marks off Newton's theory of dynamics from so many of its predecessors, namely, its elabo-

[40] *Princ.*, p. 8.
[41] *Princ.*, p. xvii.

rately *axiomatic* character. The layout of the treatise is clearly modeled on that of Euclid's *Elements*, and its peculiarly "mathematical" features arise from that fact.[42]

At this point we are entitled to take advantage of more recent insights into the nature of axiomatic systems. For in all discussions of such logical structures one distinction is a commonplace: that between mathematical variables considered only for their place in a formal system and the same variables as figuring in applications of the system.[43] Of course Newton would not have been in a position to state this general distinction in an unambiguous manner; yet there are grounds for thinking that, in effect, he is concerned to draw just such a distinction here.

To begin with, Newton's "mathematical" terms are characterized entirely by reference to their *necessary* properties, whereas the corresponding "common" or "sensible" terms are spoken of as "measures" of spatial and temporal magnitudes, which satisfy the basic axioms and definitions of the theory only *contingently*: "mathematical time, of itself, and from its own nature, flows equably . . .; common time is some sensible and external (whether accurate or unequable) measure of duration by the means of motion."[44] The fundamental difference is between "time" so understood that it flows equably "from its own nature," and

[42] The laws of motion are labeled "axioms," and the whole exposition is in terms of "lemmas," "corollaries," "theorems," and the like. Cf. I. B. Cohen, *op. cit.*, p. 128. A *deductive* method of exposition was of course no novelty, but Newton goes out of his way to separate the formal mathematical exposition of his dynamical system from its application to the phenomena of nature. The interpretation I give of Newton's scholium in what follows generally agrees with that given more briefly in E. W. Strong's paper "Newton's 'Mathematical Way,'" *Journal of the History of Ideas*, XII (1951), 95-110, reprinted in *Roots of Scientific Thought* (1957), pp. 412-432; *n.b.* esp. pp. 422-424. My attention was drawn to this admirable discussion only after I had completed the first version of my present paper. See also Strong's *Procedures and Metaphysics* (1936) for a general criticism of the Burtt view of Newton.

[43] See, for instance, Braithwaite, *Scientific Explanation*, pp. 27 ff. Braithwaite's treatment of a mathematical calculus as "a game for one player played with marks on paper" is, of course, quite un-Newtonian, but the distinction between mathematical quantities and their physical measures can be drawn equally, whether one adopts a "realist" or a "formalist" approach to the philosophy of mathematics.

[44] *Princ.*, p. 6.

measures of time which may or may not be equable. Taken in this sense, the distinction is not an empirical one between two separate sets of things, one stationary, one mobile, but rather a logical one: certain questions, it is implied, make sense of any "sensible" measure of such magnitudes which simply do not arise about the corresponding "mathematical" terms. We can ask whether or not the year is getting longer, but of "time" dynamically and mathematically defined this question cannot be asked. We can talk likewise of any material thing whatever moving—changing its place—so that no observable (sensible) frame of reference can be "immovable" by the simple meaning of the term ("from its own nature"), but "places" themselves, supposing we can give the term a purely mathematical sense, cannot be said to "move," nor strictly speaking to be "stationary" either. In Newton's theory, then, the fundamental criteria of uniformity of motion and identity of position are to be *mathematical* ones: all such terms are to be grounded logically in the theory and not conceived "from the relation they bear to [any particular] sensible objects."[45]

Newton's theory being axiomatic in structure, some such distinction was essential, whether or not Newton himself was crystal clear in his own mind about its logical character. (He would have been a double genius if he had been.) But he does more than state the distinction and leave it at that; he goes on to indicate how we are to recognize in practice measures of time and spatial frames of reference suitable for the application of his theory to the problems which interest him, notably to problems in planetary dynamics. As he sees—and explains—not all measures of spatial and temporal magnitudes are for his purposes equivalent or equally applicable. To this extent, some measures of duration and sensible spaces (or "movable dimensions") are better realizations than others of the mathematical ideals of his theory. Solar time, for instance, is only roughly uniform, and already astronomers had taken to correcting it. Rotating and accelerating axes of reference have likewise to be ruled out; one must confine oneself to frames of reference which

[45] *Ibid.*

are for practical purposes "inertial frames," if the laws of motion are to be applicable in their simplest form.[46]

The case of absolute time is instructive, on account of Mach's complaint that this is "an idle metaphysical conception" which has "neither a practical nor a scientific value."[47] For the illustration Newton offers of its application is both practical and scientific:

> Absolute time, in astronomy, is distinguished from relative, by the equation or correction of the vulgar time. For natural days are truly unequal, though they are commonly considered as equal and used for a measure of time: astronomers correct this inequality for their more accurate deducing of the celestial motions. . . . The necessity of this equation, for determining the times of a phenomenon, is evinced as well from the experiments of the pendulum clock, as by the eclipses of the satellites of Jupiter.[48]

The allusions in this last sentence are worth a word of explanation. Suppose we make a pendulum clock as accurately as we can, and compare the rate of swing of the pendulum with the motion of the sun across the sky; we shall find that they do not proceed exactly in step, their relative rates varying between the equinoxes and the solstices. What are we to make of this discovery? If we use the "natural" or solar day as our measure of "vulgar time," we shall be obliged to say that the pendulum swings at a rate which varies slightly according to the season of the year, and that this variation persists however much we improve the construction of the pendulum. (This by itself might be a genuine phenomenon calling for a physical explanation.) But now suppose in addition that we carefully observe the motions of Jupiter's satellites,[49] timing the instants at which they are eclipsed once

[46] The most satisfactory analysis I know of this aspect of the Newtonian theory is to be found in W. H. Macaulay's paper, "Newton's Theory of Kinetics," *Bulletin of the American Mathematical Society*, III (1896-1897), 363-371. Macaulay uses the phrase "kinetic axes," instead of the more familiar "inertial system" introduced by Lange in 1885; cf. Jammer, *op. cit.*, pp. 138-139.

[47] *The Science of Mechanics*, p. 274.

[48] *Princ.*, pp. 7-8.

[49] What Newton calls elsewhere the "circumjovial planets"; cf. *Princ.*, p. 401.

again by solar time: in that case, we shall find a precisely similar seasonal variation. Yet who will want to concede that the rate of circulation of these satellites around Jupiter is affected by the season of the year—the season, that is, not of the jovial but of the terrestrial year? We clearly do better to regard the pendulum and the circumjovial satellites alike as moving more uniformly than the sun across the sky, hoping in due course to explain this variation in the sun's apparent motion as the more genuine phenomenon. (An explanation is in fact not hard to find: the effect is produced by the combination of the earth's orbital motion with its rotation.) If we accept this alternative, however, that will mean abandoning the previous "vulgar" measure of time and taking in its place for theoretical purposes a dynamical ideal: namely, the common ideal toward which both terrestrial and celestial motions—pendulums and satellites—are found to approximate. In these so nearly uniform motions we see the closest physical realization of the "absolute, true and mathematical time" of Newton's axiomatic system.[50]

Newton's model of a mathematical system is geometry, and there too a similar distinction can be drawn. Straight lines and circles described in chalk on blackboards, cut out of sheet iron or painted on walls, satisfy only approximately the specifications laid down in an axiomatic geometry such as that of Euclid. The mathematician's ideal straight lines and circles possess "in their own nature," as Newton might say, characteristics which "sensible" straight lines and circles possess only more or less in fact. So one could preface an axiomatic treatise on geometry with an explanatory scholium doing for terms like "point," "line," and "circle" what Newton's own scholium does for "time," "place," and "motion." This scholium would indicate how the nonmathematical use of geometrical terms differs from the specialized, mathematical use, and how "certain prejudices" might again arise from failing to grasp these differences clearly. Indeed, Newton does himself refer to this distinction some ten pages before the disputed scholium on space and time, in the

[50] On this subject, W. H. Macaulay is again most penetrating: see his article, "Motion, Laws of," in the *Encyclopaedia Britannica*, 10th ed., XXXI, 7-11.

preface to the *Principia*. There he underlines the contrasts between the mechanical production of geometrical figures and the rational, demonstrative discussion of their properties. The business of mathematics is solely with the latter, and it applies to actual material things only by way of techniques of measurement and description:

> The description of right lines and circles, upon which geometry is founded, belongs to mechanics. Geometry does not teach us to draw these lines, but requires them to be drawn; . . . then it shows how by these operations problems may be solved. To describe right lines and circles are problems, but not geometrical problems. The solution of these problems is required from mechanics, and by geometry the use of them, when so solved, is shown; and it is the glory of geometry that from those few principles, fetched from without, it is able to produce so many things. Therefore geometry is founded in mechanical practice, and is nothing but that part of universal mechanics which accurately proposes and demonstrates the art of measuring.[51]

Any satisfactory reading of the contentious scholium on space and time should take this earlier passage into account. In each case, Newton contrasts mathematical arguments and ideals with practical instances or measures. In dynamics as in geometry it can always be asked how accurately in fact particular figures or measures realize our ideals, whether of "right lines and circles" or of "absolute, true" time and space. Sensible standards and measures of position, velocity, and lapse of time will possess more or less in fact the characteristics which the variables x, y, z, t, and their derivatives possess in the theory from their own nature; and any material frame of reference we choose will be a more or less good approximation to the ideal of an inertial frame. Not for nothing was the seventeenth-century revolution in mathematical physics a Platonizing one,[52] for, on this reading, Newton is echoing Plato's own repeated insistence that theoretical entities

[51] *Princ.*, p. xvii.

[52] See, for instance, Ernst Cassirer, "Galileo's Platonism," in *Studies and Essays in the History of Science and Learning Offered to George Sarton* (New York, 1945), pp. 277 ff. and A. Koyré, "Galileo and Plato," *Journal of the History of Ideas*, IV (1943), 400-428, reprinted in *Roots of Scientific Thought* (1957), pp. 147-175.

only—the Ideas and the Mathematika—can be exactly of this kind or that *(τοῦτο)*, while material things must always be more or less of one sort or another *(τὸ τοιοῦτον)*.[53]

A general word can be said at this point about the function of the definitions and scholium which open the *Principia*. These have to introduce the reader to terms which are to figure in the subsequent axiomatic theory: they must accordingly indicate the sorts of procedure by which the magnitudes defined are to be measured in practice, and to that extent they will inevitably be "operational" definitions rather than formal or lexicographical ones. This has not always been recognized—for example by Mach, who objects that Newton's very first definition (of mass) is circular:

> The formulation . . . which defines mass to be the quantity of matter of a body as measured by the product of its volume and density, is unfortunate. As we can only define density as the mass of unit of volume, the circle is manifest.[54]

If we were concerned with a formal definition *within* an axiom-system, Mach's objection would carry weight; and once we have accepted the Newtonian theory *in toto* as a basis for our thought about matter and motion, we shall no doubt come to define (or redefine) density in terms of the more fundamental conception, mass. But the reader with whom Newton is concerned is not yet converted; he has opened the treatise without prior knowledge of the contents; and he has not yet been introduced even to the laws of motion. That being so, he is in no position to understand the term "density" as Mach does.[55] In fact, Newton's contemporaries must have read the word in an unsophisticated way, as roughly equivalent to our own "specific gravity"—this being the "vulgar" sense of the word. And so Mach's circle would have been broken, and the reader introduced to the idea of mass operationally, by way of more familiar and easily measured

[53] *Timaeus*, 49d.

[54] *Op. cit.*, pp. 237-238.

[55] I. B. Cohen understands "density" here as "the number of corpuscles per unit of volume"; but one need hardly bring in Newton's atomism at this point, any more than one need his subsequent redefinition of density in Book III (*Princ.*, p. 414): see Cohen, *op. cit.*, p. 115 n.

quantities. The quantity of matter or mass of a body, says Newton in further elucidation, "is known by the weight of each body; for it is proportional to the weight, as I have found by experiments on pendulums, very accurately made, which shall be shown hereafter."[56] It is, therefore, no accident that five of his eight definitions take the form, "So-and-so *is the measure of the same*, arising from (or proportional to) Such-and-such."[57]

III

In this examination of Newton's scholium on space and time I have focused attention on the scientific function of Newton's distinctions. By their "scientific function" is here meant the part they have to play in the dynamical explanations which Newton's theory makes possible—for instance, those which the great man himself gives later in the *Principia*, notably in Book III where he applies his theory to "The System of the World."[58] Discovering this function is not a purely historical task. In fact, it requires us to restrain for the moment our very proper interest in historical questions of two kinds: first, those about the background from which Newton's ideas sprang, and, second, those about the wider implications Newton himself might have wanted to read into his distinctions. There will be time in due course to ask whether everything in the passage we are studying can be given a purely dynamical interpretation, or whether Newton himself did not read more into his doctrines than we have here allowed. Still, as a principle of method, it seems to me that this time should be deferred. So long as a dynamical interpretation remains open to us we should accept it, just because of what it is, in preference to a metaphysical or theological one. We may perhaps, on further study of the scholium, be driven to conclude that at a certain point Newton leaves physics for metaphysics—that not everything he says there can be understood in a dynamical sense; but in

[56] *Princ.*, p. 1.

[57] Viz., Definitions I, II, VI, VII, and VIII. E. W. Strong makes this point in the paper referred to above (note 42): cf. *Roots of Scientific Thought*, p. 421.

[58] *Princ.*, pp. 397-542.

reading so austerely restricted and carefully phrased a treatise, our initial presumption must surely be against this.[59]

With this distinction in mind, let us return to the received account of Newton's views on space. If there is any justice in the present reading of his scholium, that account will have to be reconsidered. For there is a clear distinction in function between two uses of spatial and temporal terms, mathematical and common, corresponding to Newton's "absolute" and "relative" space and time; and this distinction, regarded as a *logical* distinction, has few of the implications normally read into it.

To begin with, does Newton say that the only true *measures* of spatial and temporal magnitudes are relative to nothing-at-all? Does he, that is, deny the relational character of these measures? Not at all. Of course any practical measurement of these quantities must be related to some materially-identifiable frame of reference, and so be a more or less perfect realization of the theoretical ideal in question (that is, more or less accurately substitutable for the variable in question); but measures of any kind belong on the "relative, apparent, and common" side of Newton's dividing-line. Absolute space and time are, on this reading, not the most perfect measures one could conceive, but rather the theoretical ideals to which all relative measures are more or less good approximations.[60]

From this it follows that no natural reference-frame, however perfect, could properly be identified with Newton's "absolute space." Even supposing there were an ether, whether responsible for the action of gravitational attraction as Newton supposed or luminiferous on the nineteenth-century model; even this would

[59] The contrast between Newton's *Principia* and his *Opticks* is well brought out by I. B. Cohen, *op. cit.*, esp. pp. 125 ff. The speculative freedom of the "queries" at the end of the *Opticks* is to be found nowhere in the body of the *Principia*.

[60] This statement needs some qualification. In any Platonizing theory there is liable to be a certain obscurity about the distinction between mathematical concepts (or Ideas) and their perfect realizations (the Mathematika)—between "the circle" and an actual, supposedly-perfect circle. This ambiguity is undoubtedly present in Newton's scholium, in particular where he talks of "the true motions" of bodies (*Princ.*, p. 10) meaning not notions mathematically conceived, as his definitions would suggest, but motions as known by some supposedly-perfect measure.

be, logically speaking, only one more possible reference-frame providing measures of position, velocity, and the like. It could never, without a category-mistake, be said to *be* absolute space.[61] Newton's own ether was certainly quite distinct from space; it was "only a very thin and very elastic substance, a kind of exceedingly rare gas . . . composed of exceedingly small particles between which, of course, there is vacuum."[62] And the same trouble afflicts any interpretation of "absolute space" as a "cosmic substratum" or special kind of quasi-material body. For if one does imagine some sort of cosmic substratum being found to exist, so that wherever scientists turned their instruments they observed a fine rectangular network of lines moving relative to the objects of the world, but not otherwise affecting them—even were this to be discovered, we should not be forced to identify the network as "absolute space." The question would still arise, as it must of any material reference-body such as the sun, how far that network could count as defining an inertial frame of reference. This too would be at best one more approximation, though perhaps as perfect a one as our instruments could detect, to the theoretical ideal Newton calls "absolute space."

Likewise for absolute time. One can imagine that scientists, on tuning in their radios to a hitherto-unexplored wave length, might hear ticking going on which could be traced to no terrestrial transmitter and continued without diminution or interruption wherever we listened for it. Some people might eventually conclude that we had thereby discovered a way of listening to the Deity's own chronometer; yet even so we should not be obliged to say, "So *this* is absolute time!" God would presumably find the Ptolemaic system no more laborious to operate with than the Copernican, so there is no knowing what sort of time-scale he might find natural; and the question can accordingly be raised of the Divine clock, as much as of the solar day, how far it provides a satisfactory measure of time for the purposes of our dynamics. Far, therefore, from Newton's absolute space and absolute time needing to be understood in terms of mystery-media and -processes, it would have been inconsistent of him to

[61] Cf. Jammer, *op. cit.*, p. 171.
[62] Koyré, pp. 171-172.

use them in this way, since that would have meant going back on his own distinction between the mathematical and empirical aspects of spatial and temporal variables.[63]

The problem of absolute space, which is so often treated as though it were a metaphysical one, has in fact been bedeviled by the injection of metaphysical issues at this point. Both Newton's disciples and his critics have been free in their use of the blanket-nouns "Space" and "Time," and have used them with little circumspection: they have, in particular, allowed themselves to become preoccupied with one question whose consequences have been only obfuscating—the question whether absolute space and absolute time really *exist*. Newton, as we have seen, is more cautious and shows signs of discomfort when he approaches the brink of nonsense. His pages are dotted with verbal danger-signals like "as it were," and these we ignore at our own risk; he is not to blame for the results if we insist on taking literally something offered solely as a *façon de parler*. Even his remark about God perceiving things directly in space "as it were in his sensorium"[64]—one which roused Leibniz's especial scorn[65]—is qualified in this way, as Dr. Johnson hastened to point out to the Rev. Hector Maclean, when the Minister of Col repeated Leibniz's criticisms in a Hebridean conversation.[66]

It is often claimed nowadays that Newton's reticence about metaphysical issues is the result of secretiveness rather than caution; that he was attempting to conceal his metaphysical commitments rather than to avoid metaphysical entanglements.[67] Yet once again, if there is no dynamical occasion for introducing the question whether space "exists," why are we obliged to drag it in? In fact there are good reasons for keeping the question

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[63] C. Neumann's famous body Alpha, and the sphere of the fixed stars, which Jammer discusses as possible candidates for defining "absolute space" (*op. cit.*, pp. 101-102) are, logically speaking, in no better position than any other material objects; though in practice the night sky does give us the means building up a good approximation to an "inertial system."

[64] *Opticks*, Qu. 28.

[65] See the opening paper of *The Leibniz-Clarke Correspondence*, par. 3, ed. H. G. Alexander (Manchester, 1956), p. 11. Cited below as *L-C.C.*

[66] See Boswell's *Tour to the Hebrides*, under Tuesday, Oct. 5, 1773.

[67] See, for instance, Koyré, pp. 159-160.

out, as the parallel with geometry will make clear. For one need no more assert that Newton was committed by his theory of dynamics to the objective existence of a cosmic substratum called "absolute space" than one need say that a geometer, in formulating his axiom-system, is committed to the quasi-material existence of an invisible network of geometrical entities interpenetrating the material world, which alone are for him the true straight lines and circles. In either case the question of "objective existence" is a red herring. What matters for Newton's dynamics is that his theory—which includes, of course, the distinction between inertial frames and others—should have a physical application. In this sense the question of absolute space is not one for *hypothesis*, since it concerns a mathematical notion whose legitimacy is established as soon as one inertial frame has been identified, not an unobservable quasi-material medium brought into the theory to explain things which would otherwise have been inexplicable.

Notice how the question of "real existence" can confuse the issue. Some people, after studying a little geometry, begin to say that there are really no (objectively-existing) straight lines and circles. No "sensible" straight line or circle, they see, can possess to an infinite degree of accuracy the properties of Euclid's mathematical ideals. But to say this, however understandable it may be, leads only to worse difficulties; for if no straight lines or circles really exist (one may ask), how can geometry have any application to the world?[68] Once one admits the question of "objective existence," trouble is bound to ensue, since either to assert or to deny that geometrical ideals "objectively exist" leads one equally into paradox. This is just what Poincaré found in his own study of the notion of absolute space.[69] To accept the notion,

[68] It can be argued that at this point the traditional problem of "universals" takes its start; and over universals it is certainly notorious how far the issues are bedeviled by the question whether, where, and in what form they "exist" or "subsist."

[69] *Science and Hypothesis*, ch. vii. When considering at what time the question of space's *real existence* became important for mathematicians, notice particularly the change in Euler's views remarked on by Jammer (*op. cit.*, pp. 127-128) between 1736, when "the question of the real existence of absolute space is a matter of indifference" to him, and 1750, when he calls it a "chose réelle, qui

he supposed, necessarily involved believing in its "real existence," which he could not bring himself to do; even "the absolute orientation of the universe in space," he declared, "does not exist."[70] All the same, he pondered, rotation does pose problems: "If there is no absolute space, can a thing turn without turning with respect to something? . . . All possible solutions are equally unpleasant to us."[71] And he goes on to present his well-known fable, about the men for whom the sky had always been covered with thick cloud, who might yet (he supposes) be led to conjecture —though paradoxically—that the earth turned round.

IV

I question, therefore, whether the *objective existence* of absolute space was or need have been the central issue for Newton. Its "reality" or applicability, as a concept, is a different matter. The need to make use of the concept—to treat spatial magnitudes mathematically in one's dynamical theories—that is sufficient demonstration that the notion is respectable, and not (in Mach's phrase) a "conceptual monstrosity" or *Begriffsungetüm.*[72] As Clarke puts it, in his fourth reply to Leibniz, "The reality of space is not a supposition, but is proved by the foregoing arguments; . . . showing, from real effects, that there may be real motion where there is none relative; and relative motion where there is none real." And these arguments, he adds, are "not to be answered, by barely asserting the contrary."[73] It is in this respect—in taking Newton to be concerned not with the objective existence of a hypothetical entity called Absolute Space so much as with the applicability to the world of nature of two kinds of spatial and temporal concept, which he labels "absolute" and

subsiste hors de notre imagination." The issue is, of course, liable to be confused by the fact that *within mathematics* there is another perfectly respectable idea of existence—such that two positive roots of the equation $x^2 - 6x + 8 = 0$ *exist*, but no rational square-root of 2 does. Over existence at this level, however, none of Poincaré's problems need arise.

[70] *Op. cit.* (London, 1905), pp. 121-122.

[71] *Op. cit.*, p. 114.

[72] Mach, *op. cit.*, pp. xxiii-xxiv.

[73] *L-C.C.*, Clarke's fourth reply, par. 13, p. 48.

"relative"—that I chiefly contest the received interpretation of the scholium on space, time, and motion.

What then are we to make of Newton's famous "bucket experiment"? Here the force of the suggested interpretation comes out clearly. The passage in question comes toward the end of the scholium, and is intended to illustrate "the forces of receding from the axis of circular motion" which, Newton tells us, are "the effects which distinguish absolute from relative motion."

> For [he goes on] there are no such forces in a circular motion purely relative, but in a true and absolute circular motion, they are greater or less, according to the quantity of the motion. If a vessel, hung by a long cord, is so often turned about that the cord is strongly twisted, then filled with water, and held at rest together with the water; thereupon, by the sudden action of another force, it is whirled about the contrary way, and while the cord is untwisting itself, the vessel continues for some time in this motion; the surface of the water will at first be plain, as before the vessel began to move; but after that, the vessel, by gradually communicating its motion to the water, will make it begin sensibly to revolve, and recede little by little from the middle, and ascend to the side of the vessel, forming itself into a concave figure (as I have experienced), and the swifter the motion becomes, the higher will the water rise, till at last, performing its revolutions in the same times with the vessel, it becomes relatively at rest in it.[74]

Notice that this passage does not describe the detailed procedure of any one actual experiment. It is intended to do just as much as Newton says and no more, namely, to illustrate the distinction between absolute and relative motion:

> There is only one real circular motion of any one revolving body, corresponding to only one power of endeavouring to recede from its axis of motion, and its proper and adequate effect; but relative motions, in one and the same body are innumerable, according to the various relations it bears to external bodies, and, like other relations, are altogether destitute of any real effect, any otherwise than they may perhaps partake of that one only true motion.[75]

For Newton's purpose to recount the precise conduct and results

[74] *Princ.*, p. 10.
[75] *Princ.*, p. 11.

of an actual experiment[76] would have been beside the point; all that was required was an indication of the sort of familiar phenomenon in connection with which the point of his distinction should be obvious.

The point should be obvious, I say; but to many of Newton's modern critics it does not seem to have been obvious at all. Following Mach, they have understood him to be using the phenomenon as evidence of the objective existence of a bogus entity, whereas nothing in the passage itself claims more than the dynamical indispensability of a conceptual distinction. What is the origin of this ambiguity? It arises, I suspect, from attempts to state the moral of the bucket effect too concisely. The nature of the effect itself is stated easily enough: that the surface of the water in a bucket may be *either* plane *or* more or less concave (through the action of centrifugal forces) even though the angular velocity of the bucket relative to the water within it is the same in every case. If all frames of reference were indifferent for dynamical purposes, this possibility could not be admitted, since a given relative rotation should lead to one and only one value for the centrifugal forces, and so for the degree of concavity. Hence (Newton argues) not all reference-objects are on a footing, and one can distinguish rotation as "absolute" only by reference to a mathematical ideal.

But surely, it may be said, Newton is inferring something much simpler, namely, that "there is (such a thing as) Absolute Space." At this point ambiguity sets in. For this form of words *may* mean only "The concepts of absolute rotation and acceleration have application," which is clear and true; but it is more commonly read as meaning, more obscurely and dubiously, "Absolute Space exists." This formulation, too, *might* be clear and unexceptionable, if it meant "Inertial frames of reference can be actually identified in Nature"; but again an alternative translation is usually offered: "Some absolute reference-object exists in Nature." Even this interpretation *could* be rescued if one read it as meaning "Objects can *in fact* be found which satisfy for

[76] As he does, for instance, in the General Scholium to Prop. XXXI of Book II, where he describes his experiments with pendulums having bobs of different materials: see *Princ.*, pp. 316-326.

practical purposes the dynamical specification for absolute reference-objects," but again Mach and his followers have adopted a different reading—one which can more easily be ridiculed: "Absolute motion *means* motion relative to certain objects which are absolutely stationary *by definition*, viz., that invisible continuum of quasi-material points which constitute Absolute Space." Mach of course insists that no inference to the objective existence of an Absolute Space is justified; if the idea of absolute motion is to have a sense, it must *mean* motion relative to the fixed stars, and it is these stars, not an invisible continuum of quasi-material points, which constitute the basic reference-objects for dynamical theory.[77]

Newton's actual meaning, in my view, is one stage more sophisticated than Mach recognizes. No material object can, on Newton's account, be absolutely stationary *by definition*; the bucket experiment proves only the *practical* relevance of the distinction between absolute and relative rotation. This fact is not a truth of logic but a phenomenon of physics. It calls not for a definition but for an explanation, and merely to state it implies no reference to the fixed stars or to anything else. Of course, one is at liberty to try and explain this phenomenon (the inertial properties of matter) by invoking hypotheses about the influence of the fixed stars. Einstein and Sciama have in fact done this, arguing that the inertial properties of material objects in one part of the universe are the outcome of interactions with all the rest of the matter in the universe, including the most distant stars. If one does this, the fact that the directions of the fixed stars can themselves be used to determine the axes of an inertial frame will no doubt cease to be so mysterious. But however much the stars may enter into one's physical explanation of inertial effects, they remain in logic as unfitted as any other physical objects to enter into the meaning of the term "absolute rotation."

The one clear inference from the bucket-effect is, accordingly, that we must distinguish between inertial frames of reference, rotation with respect to which can count as absolute rotation, and

[77] Cf. Mach, *op. cit.*, 4th ed., p. 543: he has no objection to the phrase "absolute" rotation, "if it be remembered that nothing is meant by such a designation except relative rotation with respect to the fixed stars."

other frames. Only if all frames of reference and measure of spatial magnitudes were proved to be dynamically as good as one another might it be argued that the notion of absolute, mathematical space could now be entirely dispensed with. This, on the level of physics, not metaphysics, is a state of affairs Einstein spent much of his professional career trying to bring about. But whatever his two theories of relativity achieved, the logical distinction between mathematical variables and sensible measures still remains; and there is also still room, even within relativistic dynamics, for the distinction between inertial and other frames of reference.[78] "Thus, if 'absolute rotation' is interpreted as rotation relative to an inertial frame, it is still [to this day] as meaningful a phrase as in Newtonian dynamics."[79]

(To be concluded)

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[78] On this see Whittaker, *History of the Theories of Aether and Electricity*, II, chs. ii, v, esp. p. 160.

[79] H. G. Alexander, in *L-C.C.*, Introduction, p. liv.

AN INTERPRETATION OF CLASSES AS PHYSICAL WHOLES

THIS PAPER is an attempt to interpret classes as certain kinds of physical wholes. This interpretation will take the form of a system of definitions and axioms into which every sentence of logic involving classes may be translated. In particular, each entity in our system which functions as a class will have all the formal characteristics of a class in the usual set theories employing Russell's theory of types.

Russell's theory of types restricts the members of a class to one type, and the class itself to the next higher type. This, of course, is an informal understanding, since type restrictions apply to those formulae, or schemata, which assert the existence of a particular class and express the defining condition on its members.

The orthodox interpretation of the classes (or attributes) used in logic asserts that classes are timeless, abstract entities; the relation between these entities and the physical entities in the universe has not been precisely articulated; there appear to be two realms, the abstract and the physical, between which there is a basic, ontological opposition. The interpretation of classes to be presented in this paper implies that all the functions of classes can be performed by appropriate physical wholes, assuming that such wholes exist. On this latter interpretation there is no ontological opposition between classes and physical entities, since whatever functions as a class is not a timeless, abstract universal, or platonic entity, but is simply one of the physical entities in the universe. The relevancy of this interpretation to larger philosophical issues is evident; these philosophical issues, however, will not be examined herein.

There are important differences between physical wholes in general and classes; these differences are such that it might appear that classes *cannot* be interpreted as physical wholes. This seems to be Quine's contention:

The reassuring phrase "mere aggregates" must be received warily as a description of classes. Aggregates, perhaps; but not in the sense of composite concrete objects, or heaps. Continental United States is an extensive physical body (of arbitrary depth) having the several states as parts; at the same time it is a physical body having the several counties as parts. It is the same concrete object, regardless of the conceptual dissections imposed; the heap of states and the heap of counties are identical. The class of states, however, cannot be identified with the class of counties; for there is much we want to affirm of the one class and deny of the other. We want to say e.g. that the one class has exactly 48 members, while the other has 3075. We want to say that Delaware is a member of the first class and not of the second, and that Nantucket is a member of the second class and not of the first. These classes, unlike the single concrete heaps which their members compose, must be accepted as two entities of a non-spatial and abstract kind.[1]

Here where Quine speaks of concrete "heaps," we would say physical "wholes." The difference between a "heap" and a "whole" is, apparently, that a whole has a structure, while a heap has none. But it seems highly likely that Quine would extend his comments on heaps to include physical wholes.

At this juncture a clear notion of the differences between classes and physical wholes will be useful. The more important differences are listed below. (A proper part of a whole is any part of that whole which is not identical with it. The term "set" is used in its distributive, not its collective, sense.)

1. (*a*) There is a class with no members.
   (b) For any x, x is a whole, if and only if there exists a y, such that y is a part of x. For reasons which appear later, "is a part of" is reflexive, that is, for any y, y is a part of y. Hence, there are no wholes with no parts.
2. (a) There is a class with only one member. Within Russell's theory of logical types, each class with only one member is *not* identical with that single member.
   (b) If a whole has only one part, then that part is identical with the whole. A *simple* whole is any whole with one and

[1] Willard Van Orman Quine, *Mathematical Logic* (Cambridge, Mass., 1951), p. 120.

only one part, that is, itself. A *complex* whole is any whole with some proper part. There does *not* exist a whole with only one proper part.

3. (a) For any x, x is a class, if and only if a set of entities exist, that is, the members of x. For any set of entities of the same logical type, there exists a class whose members are those entities.

   (b) If a whole exists, then its parts exist. It is not the case that every set of entities of the same logical type are the proper parts of some whole. Quine's example of the United States as a physical body with the counties and states as parts illustrates the point. There does *not* exist an x, such that, for any z, z is a proper part of x, if and only if z is a county of the United States. If there did exist such an x, then each of the states of the United States would be a proper part of x, which, if all the proper parts of x are counties, is clearly impossible. It is equally clear, that there does *not* exist a y, such that, for any z, z is a proper part of y, if and only if z is a state of the United States. In addition, any set of entities that includes a whole, y, but excludes some proper part of y, cannot be the set of proper parts of *any* whole, because that whole would have y as a part, and not have some part of y as a part. Since "is a part of" is transitive, such a whole is impossible. Therefore there are sets of entities which are not the proper parts of any whole.

4. (a) The members of a class are of the same logical type, and the class itself is of the next higher type.

   (b) A whole and its parts are of the same logical type.

These four points express the more important differences between classes as traditionally understood and physical wholes in general. There is a difference of special importance. Every set of entities of the same logical type exhausts the members of some class. But not all sets of physical entities are the proper parts of some whole. It is true, of course, that if a whole exists, its parts exist. Yet it is also true that if a whole exists, then any whole incompatible with it does not exist. And each complex whole is incompatible with some possible whole. For example, the existence of a whole whose

proper parts are the Arctic Sea and a speck of dust in the Sahara[2] is incompatible with the existence of a whole whose proper parts are the Arctic Sea, the identical speck of dust, and a second speck of dust in the Sahara. The existence of the class consisting of the Arctic Sea and a speck of dust in the Sahara is *not* incompatible with the existence of the class consisting of the Arctic Sea, the same speck of dust, and a second speck of dust in the Sahara.

In spite of the differences between classes and physical wholes, however, we assert that certain physical wholes can function as classes, and that such wholes will have all the formal characteristics of classes in set theories employing Russell's theory of types. We turn now to the justification of this assertion.

We herein assume the logistic and symbolism of the usual first-order predicate calculus. This assumption includes the notion of a "well-formed-formula." To this calculus is added a primitive logical operator: *C*. *C* can be read—and is intended to be interpreted—as both "is fully contained within," and "is a part of." *C* is reflexive, nonsymmetrical, and transitive. *C*, of course, is a binary relation. The intended interpretation of *C* (except in regard to its reflexiveness) is well illustrated by Russell's use of the notion of "structure."

> To exhibit the structure of an object is to mention its parts and the ways in which they are interrelated. If you were learning anatomy, you might first learn the names and shapes of the various bones, and then be taught where each bone belongs in the skeleton. You would then know the structure of the skeleton in so far as anatomy has anything to say about it. But you would not have come to an end of what can be said about structure in relation to the skeleton. Bones are composed of cells, and cells of molecules, and each molecule has an atomic structure which is studied by physics.[3]

Russell's statement is incomplete. He does not specify whether the proper parts of the skeleton he mentions are *all* of the proper parts of the skeleton. Throughout this paper, we will assume that such is the case, that is, that all of the proper parts of the skeleton

[2] This example was suggested by a passage in Nelson Goodman's book, *The Structure of Appearance* (Cambridge, Mass., 1951), p. 46.

[3] Bertrand Russell, *Human Knowledge, Its Scope and Limits* (New York, 1948), p. 250.

are either bones, or cells, or molecules (or the parts of molecules). We take it that a collection of two or more bones is not a bone, and is not therefore a proper part of the skeleton. In particular, the rib-case is a collection of the skeleton's bones, but the rib-case is not a bone, and thus the rib-case is not a proper part of the skeleton. In Russell's example, C is restricted to relating just the skeleton, the bones, the cells, the molecules, and the parts of the molecules. In detail: C holds between the molecules and the cells; C holds between the cells and the bones; C holds between the bones and the skeleton; since C is transitive, C holds between the molecules and the bones; C holds between the molecules and the skeleton; C similarly holds between the cells and the skeleton. Intuitively, if a molecule is a part of a cell, which is a part of a bone, which again is a part of a skeleton, then that molecule is a part of the bone, and of the skeleton; further, the cell is a part of the skeleton. We add, since C is reflexive, that a cell, for instance, is a part of itself. We distinguish two kinds of parts of any entity: those parts of an entity which are not identical to that entity, that is, its proper parts, and those parts of an entity which are identical to that entity. In the example, the molecules, cells, and bones are the proper parts of the skeleton; the skeleton is a part, but not a proper part, of itself.

There is a further point in regard to C: an infinite number of entities may bear the C relation to one entity, that is, a whole may have an infinite number of parts.

C is reflexive; but it might be objected that *part-whole* is irreflexive, that if x is a part of y, x is in some sense less than y; and hence x could not be identical with y. The point about the reflexiveness of C, however, is not one of intuitive plausibility but of technical convenience. If we assume that C is reflexive, a definition for the notion of identity is readily available; but if we deny reflexivity to C, then no plausible definition of identity can be made in terms of C. Let us suppose that C were irreflexive, and attempt to define "x is identical with y" as "for any z, Czx, if and only if Czy"; in short, x is identical with y just when they have the same parts. If C is irreflexive, then the *parts* of a whole are its proper parts. With C irreflexive, and with the above definition of identity, we should have to hold that two distinct

wholes with no proper parts have the same parts, in other words, none, and that therefore the two are identical. Intuitively, this result is absurd. No such intuitive absurdity results if C is made reflexive and the above definition is retained.

With C reflexive, a whole with no proper part has itself as a part. Since two distinct wholes with no proper parts do not have each other as parts, they will not have the same parts. As they do not have the same parts, by our definition of identity they are not identical.

Making C reflexive allows us to define identity in terms solely of C without any intuitively repugnant results. The definition of identity is as follows:

1. $$x = y \underset{\text{DF}}{=} (z)\ (Czx \leftrightarrow Czy).$$

("$\underset{\text{DF}}{=}$" between two expressions indicates that the formula on the left abbreviates the formula on the right.)

The assertion, for any z, Czx if and only if Czy, entails Cxy and Cyx. Intuitively, the following proposition is evident: if Cxy and Cyx, then x and y must be the same, single object. The above definition of identity incorporates this proposition.

The relation of class membership within the context of the theory of types is irreflexive and intransitive. The intimate tie between class membership and the notion of "class" is obvious. If class membership is to be defined ultimately by means of C, then some relation which is both irreflexive and intransitive must be defined by C, and our defined notion of identity. The definition of some irreflexive and intransitive relation, which we shall call A, meaning "is an abstraction of," by means of the transitive C and the reflexive relation of identity, is as follows:

2. $$Axy \underset{\text{DF}}{=} \{\, Cxy \cdot \sim x = y \cdot (z)\, [(Czy \cdot \sim z = y \cdot \sim z = x) \rightarrow \sim Cxz] \,\}.$$

"x is an abstraction of y" means that x is a proper part of y, and x is not a proper part of any proper part of y. In short, there is no part of y which, in some sense, is between x and y. The sense of "abstraction of" can be shown by the use, once again, of Russell's skeleton.

The skeleton is composed of bones, the bones of cells, the cells of molecules, the molecules of atoms, the atoms of electrons, positrons, and neutrons.[4]

All of the proper parts of the skeleton are those explicitly mentioned by Russell: the bones, the cells, the molecules, the atoms, the electrons, the positrons, and the neutrons. There are *no* other proper parts of the skeleton. In particular, the collection of bones which is the skeleton's rib-case is not a proper part of the skeleton; its existence as a physical whole is simply incompatible with the existence of the skeleton as described by Russell. To return to Russell's example: A physical whole is composed of its abstractions; the abstractions of the skeleton are its bones; the abstractions of each bone are its cells; the abstractions of each cell are its molecules; and every molecule in the skeleton has as its abstractions particular atoms, each of which have as abstractions certain electrons, positrons, and neutrons. It should be noted that while the cells of a bone are its abstractions, these cells are not abstractions of the skeleton; hence the A relation is not transitive. But if x is an abstraction of y, and y is an abstraction of z, x is a proper part of y, and y is a proper part of z; we infer from this that x is a proper part of some proper part of z; it follows from the definition of A that x is not an abstraction of z; hence we see that A is intransitive; further, A is irreflexive, because if x is an abstraction of y then x is not identical to y.

A as defined does not eliminate possible cases involving wholes with an infinite number of parts, in which there are proper parts of wholes which are not abstractions of any whole.[5] It is possible that some x exists, such that x is a proper part of a whole, and x is not an abstraction of any whole; the following proposition can be easily understood in reference to the definition of A:

$$(\exists x)\ (y)\ [(Cxy \cdot \sim x = y) \rightarrow (\exists w)\ (Cxw \cdot \sim x = w \cdot Cwy \cdot \sim w = y)].$$

This proposition asserts that if x is a proper part of any whole, then there exists a second whole of which x is a proper part, which

[4] *Ibid.*, pp. 251-252.

[5] Mr. Frank Morsman first made the point known to us.

is also a proper part of the first whole. Hence x will always be a proper part of some proper part of a whole, and therefore x will never be an abstraction of any whole. This entails that there might exist a whole with a proper part which was not an abstraction of some part of that whole. It also entails that there might exist a whole none of whose proper parts are abstractions of any whole, or a whole with no abstractions, but which has a proper part with abstractions. In what follows it will be convenient to ignore the possibility of such cases. We assume, in effect, that each of the proper parts of any whole is a *part* of some abstraction of that whole.

A set of mutually external wholes, that is, wholes which are not parts of one another, may form the abstractions of some whole. If a certain whole exists, then no proper subset of its abstractions forms the abstractions of another whole. Given the existence of a whole, for example, with three abstractions, a, b, and c, then no whole exists whose abstractions are either a and b, or a and c, or b and c. It is clear that a complex whole is, in some sense, determined by the set of its abstractions. A complex whole, x, can be described as "that x, each of whose proper parts is a part of some entity in a given set of mutually external entities, that is, the abstractions of x." It is simpler to describe a complex whole by mentioning only its abstractions, rather than by mentioning its proper parts. Any description of a complex whole involving just its abstractions can always be expanded into one involving all of its proper parts. For example, if x is described as "the x, such that for any y, y bears the A relation to x, if and only if y is identical to either a_1, or a_2, or a_3, or a_4," then x may also be described as "the x, such that for any z, z is a proper part of x, if and only if z is a *part* of either a_1, or a_2, or a_3, or a_4." A complex whole in general can always be described by mentioning its abstractions. It is important to note that a whole might have two, three, four, or any finite number of abstractions; also, a whole might have an infinite number of abstractions. Any set of mutually external wholes, no matter how extensive, may possibly form the abstractions of a complex whole.

While the A relation has two of the characteristics of class membership, its irreflexiveness and intransitivity, it would be

erroneous to assert that "*x* is a member of *y*" means "*x* is an abstraction of *y*." A serious difficulty arises when the notion of subclass is defined by means of *A* rather than by class membership in the usual sense.

X is a subclass of *y*, if and only if all the members of *x* are members of *y*. Interpreting membership as *A*, we get: *x* is a subclass of *y*, if and only if all the abstractions of *x* are abstractions of *y*.

It is evident that if *x* is an abstraction of *y*, then all the parts of *x* are parts of *y*; it is further evident that if every proper part of a complex whole is a part of some second whole, then the first whole is a part of the second. Earlier we had assumed, in effect, that every proper part of a whole is a part of some abstraction of that whole; hence, when the notion of subclass is defined by means of *A*, then if *x* is a subclass of *y*, all the proper parts of *x* are proper parts of *y*; therefore *x* must be a part of *y*; since *x* is not identical to *y*, *x* is a proper part of *y*; this implies that all the abstractions of *x* are proper parts of some proper part of *y*; therefore the abstractions of *x* are not abstractions of *y*. This conclusion contradicts our assumption that *x* was a subclass of *y* (where *x* and *y* are not identical). Hence, the *A* relation by itself is not equivalent to class membership.

To avoid this collapse of class inclusion when the *A* relation is taken as equivalent to class membership, it is necessary to restrict the use of *A* in defining class membership. If a given whole is to function as a class, its members will bear the *A* relation to it, but there will be some entity that bears the *A* relation to it which will not be a member of the given whole. In short, a distinction must be introduced among the entities that bear the *A* relation to a whole which is to function as a class. The distinction will be made between those entities which may be members of a class and those which cannot be members of any class. Taking the notion of "element" as that of being a member of some class, the distinction among the entities bearing the *A* relation to some whole will be that of being an element or a nonelement.

The justification of the distinction between element and nonelement may be seen when it is used in a new definition of class

inclusion among nonidentical entities. (This definition is not intended to apply to cases where x has no abstraction which is an element.) X is included in y, if and only if there exists a w, such that w is an element, and w bears the A relation to x, and for any z, if z is an element, and z bears the A relation to x, then z bears the A relation to y. In short, x and y overlap, that is, have certain abstractions in common, but each has some abstraction which the other does not have. X will be included in y, just when they have in common at least every element that bears the A relation to x. But since some nonelement which bears the A relation to x will not bear the C relation to y, not all of the proper parts of x will be proper parts of y, and hence x will not be a proper part of y. Therefore the general collapse of class inclusion that follows from defining it as, for any z, if Azx then Azy, will be averted by this new definition involving elements.

The present problem is how the notion of element is to be defined in terms of A. Any physical whole which is to function as a class, in general, must have some abstraction which is a nonelement. Hence both elements and nonelements are abstractions of classes. If, however, a distinction can be made between the sorts of classes to which elements bear the A relation, and those to which nonelements bear the A relation, then that distinction may be employed in a definition of *element*. The articulation of such a distinction follows an examination of certain classes to which elements bear the A relation.

Each element has a unit-class, an element with just one member. A unit-class has among its abstractions one and only one element, its sole member, and some nonelement. It is not necessary to assume that a unit-class has more than one nonelement among its abstractions, and it would be economical to assume that a unit-class has no more than one nonelement. In the interest of logical economy, we assume that a unit-class has but two abstractions: one element and one nonelement. Since every element has a unit-class, it follows that every element is an abstraction of some whole with just two abstractions.

The usual Boolean algebra has as a theorem the proposition that if an entity is a member of some class, then it is a member of a class with two members only. This is so because Boolean

algebra assumes that there exist at least two distinct entities. Since every element is a member of its unit-class, it should follow that, for each element, there exists a y, such that y is a class with just two members. In that case, y is a complex element whose abstractions include a pair of elements and some nonelement. Hence, y must have at least three abstractions: the elements which are its members and some nonelement. It is not necessary to assume that y has more than one nonelement among its abstractions, and as in the case of unit-classes, it would be economical to assume that y has no more than one nonelement. Employing the rule of logical economy, we assume that y has just three abstractions: its two elements and a single nonelement. We conclude that for each element there exists a y, such that the element is an abstraction of y, and y has only three abstractions.

Every element is usually a member of several classes with only two members. We assume that at least one of those classes has but three abstractions. However, not all of these classes need have just a trio of abstractions. Some of them may have any number of abstractions, although they must always have two elements, their members, as abstractions.

From the above considerations it appears that each element bears the A relation to a whole with two abstractions, and another whole with three abstractions. There is no necessity to suppose, however, that this is true of nonelements. Therefore we assert that each element bears the A relation to a pair and a trio, that is, a whole with two, and another whole with three, abstractions. And we suppose that a nonelement is not an abstraction of both a pair and a trio. This supposition affords grounds for a distinction between elements and nonelements which may be expressed by means of the A relation. We define an element, then, as any entity which is an abstraction of both a pair and a trio.

$$3. \quad Ex \underset{\text{DF}}{=} (\exists s, t, v, u, w)[\sim x = t \cdot \sim x = u \cdot \sim x = w \cdot \sim t = u \cdot \sim t = w \cdot \sim u = w \cdot (y)\{Ays \leftrightarrow (y = x \vee y = t)\} \cdot (y)\{Ayv \leftrightarrow (y = x \vee y = u \vee y = w)\}].$$

It is intended that each proper part of any complex whole is a

part of at least one of its abstractions. Thus, no whole exists whose abstractions consist of u and w, or u and x, or w and x.[6]

Every whole which is to function as a class will have two kinds of abstractions: (1) abstractions which are abstractions of both a pair and a trio, or elements; and (2) abstractions which are not abstractions of both a pair and a trio, or nonelements. Further, each such whole will be an element, that is, will be an abstraction of a pair and a trio.

Class membership may be understood essentially as equivalent to a combination of elementhood and the use of the A relation. X is a member of y if and only if both x and y are elements, and x is an abstraction of y. In symbols:

("M" is the abbreviation for "is a member of.")

4. $$Mxy \underset{\text{DF}}{=} (Ex \cdot Ey \cdot Axy).$$

We have stated that not all of the abstractions of a whole which is to function as a class are elements, but some abstraction of such a whole will be a nonelement. Hence, if y is a whole which functions as a class, then its members will be those of its abstractions which are also elements, that is, entities which are abstractions of some pair and some trio. If a whole has several members, then, since all of its subclasses exist, several other wholes, that is, its subclasses, will overlap it. If the wholes which overlap, that is, have an abstraction in common with, a given whole x are to be subclasses of x, then they must satisfy two conditions: (a) each overlapping whole must be an element; and (b) for each such whole, all of its abstractions which are elements must be abstractions of x.

If all of the overlapping subclasses of x exist, then there must also exist the class of these subclasses of x. The class of the subclasses of x which overlap x will be a complex element. Included among the abstractions of this complex element will be every overlapping subclass of x; an entity will be both an abstraction of this complex element and an element, if and only if that entity is an overlapping subclass of x. In short, the class of overlapping subclasses of some

[6] See the discussion of C and A involving Russell's example of the skeleton, pages 33-36, above.

whole x is a complex element such that it has among its abstractions every element all of whose elements are abstractions of x.

An example will make the point clear: let x have as members just the elements a and b. The overlapping subclasses of x will consist of the unit-class of a, and the unit-class of b, and of course x itself. X has as abstractions a, and b, and at least one additional nonelement; (x may have more than one nonelement as an abstraction). The unit-class of a will be composed of a, and a single nonelement a'. The unit-class of b will be composed of b and a single nonelement b'; both pairs, a and a', and b and b', are elements in their turn. The class of the overlapping subclasses of x will be a whole, which is also an element, whose abstractions include the pair a and a', plus the pair, b and b', plus x itself, but no other elements, plus at least one nonelement. If x has more than two members, the resulting class of overlapping subclasses of x becomes more complicated but the basic structure remains the same.

From the above example it is apparent that a unit-class is intended to be a pair of abstractions; a class with just two members will be any element whose abstractions include just two elements (some of these latter classes are intended to have but three abstractions: two elements and a single nonelement).

The class of the members of the members of a given element y will have among its abstractions every element which is an abstraction of some element which is also an abstraction of y. The following is an example of such a class: Let the members of y consist of three unit-classes; the first unit-class is composed of a and a', the second of b and b', and the third of c and c'. Y is composed of a and a' plus b and b' plus c and c' as elements, and at least one nonelement. The class of the members of the members of y will be composed of a, b, and c, but of no other elements, and at least one additional nonelement; its abstractions will include a, b, c, but specifically exclude a', b', and c'.

On the basis of the M relation a hierarchy of elements similar in structure to the orthodox hierarchy of Russellean classes may be constructed. If on one level of such a hierarchy there exist n elements, on the next higher level there exist 2^n elements. What accounts for the large increase in the number of elements?

In orthodox class theory there is no precise answer. In the present hierarchy of elements the answer lies in the existence of nonelements. For every set of elements with n members (none of which are parts of the others), there exist sufficient nonelements to combine with them and among themselves to form the 2^n new elements of the next higher level.

The difference between an element and a nonelement rests on their different functions, not in any ontological or metaphysical characteristic. The job of an element is to be a member of physical wholes; the job of a nonelement is fundamentally to prevent the collapse of one whole into another when the relation of class inclusion holds between them.

The task of constructing a hierarchy of elements to correspond with the orthodox hierarchy of classes is not completed with the definition of class membership. The notion of class membership coupled with the various defining characteristics (or well-formed-formulae) of the members of a class is an inadequate foundation for a system of logic which is free from contradiction. Since the discovery of the notorious paradoxes, involving class membership and such defining characteristics as "the class of all classes which are not members of themselves," various restrictions as to the forming of classes have been introduced into logic. One of these restrictions is Russell's theory of logical types. Since the theory of logical types was first introduced into logic, it has undergone several modifications; in its present form, it has been characterized by Quine as follows:

> . . . the theory of types is substantially this: each entity is conceived as belonging to one and only one of a hierarchy of so-called types; and any formula which represents membership as holding between entities of other than consecutive ascending types is rejected as meaningless along with all its contexts. *Further:* under Russell's theory there is no one exhaustive class V (the universal class), but rather an infinite array of analogues each of which exhausts a type. In similar fashion every other logically definable entity, e.g., A (the null class), the identity function I, and indeed every number, loses its unity and gives way to infinitely many replicas.[7]

[7] Quine, *op. cit.*, pp. 163-164.

Russell's theory of logical types is a metalinguistic device applying to the formulae which, in effect, describe the members of a class; any formula which violates the theory of types does not describe the members of any class (not even the null class); these "formulae" are simply meaningless.

The definition of membership presented in this paper depends ultimately upon a relation, *C*, which relates entities which are, on analogy with Russell's type hierarchy, of widely different "types." Hence, some well-formed-formulae involving *C* or *M* would be, on analogy with Russell's criterion of meaningful formulae, a meaningless set of signs. We can, however, generate a hierarchy of elements which corresponds to the Russellean hierarchy of classes without any metalinguistic notion beyond that of the first-order predicate calculus' notion of *well-formed-formula*. In doing this we will utilize, along with the *M* of membership, the transitive relation, *C*.

The generation of the hierarchy of elements along non-metalinguistic lines will follow a closer examination of the notion of the logical type of an entity.

The hierarchy of types, and its essential properties, can be enunciated by the following five propositions.

1. Every entity has one and only one type.
2. The type hierarchy is ordered by consecutive ascending type levels.
3. There is one and only one such type hierarchy.
4. For every set of entities of a given type, there exists a class whose members are the members of that set.
5. The members of any given class are all of one type, and the given class is of the next higher type.

In any class theory which employs Russell's type theory, there is usually an axiom schema which is called the "Axiom of reducibility." This is a schema which when properly filled out, so to speak, yields an axiom of the class theory which asserts the existence of a class all of whose members satisfy such-and-such a condition. We may express the intent of the axiom schema in the following way:

There exists a y of type n plus 1, such that for any x of type n, x is a member of y if and only if a given condition on x is satisfied, and x is of type n.[8]

If we make the condition on x in the above axiom schema the condition that x is identical to x (which every entity satisfies), then there will exist a y of type n plus 1, whose members are all the entities which are of type n. Y will be the class which exhausts the set of entities of type n. Y will be the exhaustive or universal class for the entities of type n. If there is such a y for any given type n, then there exists a universal class for the entities of every type.

For any type n, all of the entities of type n will be members of the universal class for type n, and the universal class of the entities of type n will have as members just those entities which are of type n, and none others.

Intuitively then, to assert that x is of type n is equivalent to asserting that x is a member of the universal class of the entities for type n. Further, there seems to be little difference in asserting that x is of a given type and asserting that x is a member of a given universal class. Hence, we will adopt the convention of asserting for some entity membership in a universal class in place of asserting that that entity has a type.

How is the notion of universal class to be defined without recourse to the notion of type? A universal class exhausts the entities of a given type; the members of any class must be of a single type; therefore there does not exist a class whose members include all of the members of a universal class and some additional entities, because these additional entities would be of a type different from the members of the universal class. We may infer, then, that no universal class is a proper subclass of any other class. A universal class is a subclass of itself only. Any other kind of class, since all its members are of one type, must be a proper subclass of some universal class; hence universal classes are the only classes which are subclasses of themselves only. Therefore by means of the M relation we may define the notion of a universal class as any complex element which is a subclass of itself alone.

5. $\qquad Ux \underset{\text{DF}}{=} (z)\,[(y)\,(Myx \rightarrow Myz) \rightarrow x = z].$

[8] Paul Rosenbloom, *The Elements of Mathematical Logic* (New York, 1950), p. 98.

Earlier it was decided that to say that x has a type is to say that x is a member of a given universal class y. From this convention a way of translating the phrase "type level" into some statement involving universal classes and M becomes apparent. A type level n refers to all of the entities of type n taken as a collection, that is, as a class. Hence, if one asserts something of a type level n, then one asserts something of all and only those entities of type n; such an assertion is equivalent to one about the class of entities of type n; hence to speak of type level n is to speak of a given universal class y.

Referring to our five propositions concerning the essential properties of the hierarchy of types, it can be seen that the proposition, the hierarchy of types is ordered by consecutive, ascending type levels, can be translated into the statement, the type hierarchy is ordered into consecutive ascending *universal classes*. The oddity and imprecision of the phrase "consecutive ascending" must be here taken into account. What sort of relation must hold between type levels if one may conceptually "consecutively ascend" the type hierarchy?

The process of ascending the type hierarchy may be "visualized" by comparing it with climbing an unending flight of stairs a step at a time. By this comparison we see that consecutive ascending universal classes will bear without exception a certain asymmetrical and intransitive relation among themselves, such that no pair of universal classes will bear that relation to the same class.

The relation M, which asserts membership among elements, is irreflexive, intransitive, and asymmetrical (since C is, for two nonidentical entities, asymmetrical). Hence we may translate the statement, universal classes form a consecutive ascending hierarchy, into the assertion, every universal class bears the M relation to some single universal class and no two universal classes bear the M relation to the same universal class.

On the basis of the above translations for the phrases, *x has a type*, and *type level*, and *consecutive ascending type levels*, the five propositions giving the essential properties of the type hierarchy may be translated as follows.

1. (a) Every entity has one and only one type.
   (b) Every element is a member of one and only one universal class.
2. (a) The type hierarchy is ordered by consecutive, ascending type levels.
   (b) Every universal class is a member of one universal class.
3. (a) There is one and only one such type hierarchy.
   (b) There is one and only one series of universal classes such that each class in the series is a member of one class in the series, all universal classes are in the series, and no two universal classes are members of the same class.
4. (a) For every set of entities of a given type there exists a class whose members are the members of that set.
   (b) For every set of elements which are members of a given universal class there exists a class whose members are the members of that set.
5. (a) The members of any given class are all of one type, and the given class is of the next higher type.
   (b) The members of any given class are all members of some single universal class, and the given class is a member of the same universal class as is the the first universal class.

5 (b) may require an explanation. The members of the given class are also members of the first universal class; this means that these members are all of the same type, and the first universal class is itself that particular type level; the next higher type level must be the entity that immediately succeeds the first universal class in the consecutive ascending order of the hierarchy; since the connection between type levels is the membership relation M, it follows that the entity that succeeds the first universal class must be the universal class of which the first one is a member; from this it follows that the given class, to be of the next higher type, must be a member of the universal class of which the first one is a member.

The translation of statements 1(b), 2(b), 3(b), 4(b), and 5(b) into well-formed formulae involving just the usual logical notions, and symbols "C," "$=$," "A," "M," and "U," will yield a set of axioms which (along with axioms dealing with the properties

of the five symbols) will generate a hierarchy of elements which corresponds with the hierarchy of orthodox classes.

The following is such a set of axioms.

I. $(x)Cxx$.
II. $(x)\ (y)\ [(Cxy \cdot Cyx) \rightarrow x = y]$.
III. $(x)\ (y)\ (z)\ [(Cxy \cdot Cyz) \rightarrow Cxz]$.
IV. $(x)\ (y)\ [[\{(\exists w)\ (Cwx \cdot \sim w = x) \cdot$
$(z)\ [(Czx \cdot \sim z = x) \rightarrow Czy]\} \rightarrow Cxy]]$.
V. $(x)\ \{Ex \rightarrow (\exists y, t)\ [(Myt \cdot Mxt \cdot$
$Uy) \cdot (z)\ (Mzx \rightarrow Mzy)]\}$.
VI. $(x)\ (y)\ [(Ux \cdot Uy) \rightarrow (Cxy \vee Cyx)]$.
VII. $(u)\ \{Uu \rightarrow (\exists y)\ (x)\ [Mxy \leftrightarrow (F(x) \cdot Mxu)]\}$.[9]
VIII. $(u)\ [Uu \rightarrow (\exists y, t)\ (x)\ (Mut \cdot Myt \cdot \sim Mxy)]$.
IX. $(\exists u)\ Uu$.

Axiom I states that C is reflexive; axiom II asserts the intuitively obvious proposition that if x is a part of y, and y is a part of x, then x is identical to y; the obviousness this proposition enjoys stems from the fact that if C has been made irreflexive, then C would also have been asymmetrical; thus, when C behaves, so to speak, in a symmetrical way, C must also behave in a reflexive way. The fourth axiom asserts the proposition that if a whole has all of its proper parts as parts of a second whole, then the first whole is a part of the second. This axiom has as a consequence that a set of proper parts can be organized in just one way; if this were not the case, one set of parts might be the proper parts of two separate wholes which differed solely in the manner of their organization. If this latter situation were the case, our axiom would fail.

The following axioms generate the hierarchy of elements. Axiom V states in effect that the members of any class are members of the same universal class, and the given class is a member of the universal class of which the first universal class is a member. The axiom asserts that for every element x there is some universal class y of which all the members of the element are

[9] "$F(x)$" stands for any well-formed formula in which the variable "y" does not appear free.

members, and some other class t of which both the element and the universal class are members. Since t has members, t is an element; hence, because x and y are members of t there is some universal class of which both x and y are members. In short, each element is a subclass of some universal class, and is a member of some universal class of which the first is a member.

Axiom VI asserts in effect that (a) each element can be a member of one and only one universal class; (b) no two universal classes can be members of the same universal class; and (c) all universal classes participate in a series from which no universal class is excluded. (a) is obvious; assume one element to be a member of two universal classes, then it must bear the A relation to them both; but of two nonidentical universal classes, one must be a proper part of the other; hence, if our element bears the A relation to one such class, it must be a proper part of a proper part (the first universal class) of the second universal class; this, by our assumption, is impossible. (a) then follows. (b) is equally obvious; assume two nonidentical universal classes to be members of the same universal class; then both must be proper parts of the identical element, and not be proper parts of any proper part of that element; but, since one of the two universal classes must be a part of the other, it follows that one must be a proper part of a proper part (the other universal class) of the given element. This, in regard to our assumption, is impossible; hence (b) follows. (c) is perhaps not quite so obvious; axiom VI states that for any two different universal classes one is a proper part of the other. The relation "is a proper part of" is asymmetrical; this relation holding among universal classes generates a series such that no universal class is excluded from this series; and from (b) we see that no two universal classes belonging to this series bear the M relation to one universal class; there is only one such series, since if there were two series of universal classes some such classes (those belonging to the first series) would not be proper parts of some other universal classes (those belonging to the second series). From axiom V, it follows that, because universal classes are elements, each universal class is a member of some other universal class.

Axioms V and VI translate, in effect, the earlier translations

of four propositions concerning the properties of the type hierarchy; those four statements so translated are 1(b), 2(b), 3(b), and 5(b). Axioms VII and VIII translate statement 4(b).

VII is an axiom schema; "$F(x)$" in this schema stands for any well-formed formula of the first-order predicate calculus in which "y" does not appear free; for every such well-formed formula, there is an axiom in the form of the schema. The axioms formed by schema VII imply that for every universal class all of its subclasses exist, except its empty, or null, subclass. "$F(x)$" could stand for the formula, "x is not identical to x," which is false of everything; we could infer that there existed some y, such that for any x, x did not bear the M relation to y. But y in this case might be any null element, of which there are several, or any nonelement, since nothing bears the M relation to a nonelement.

Axiom VIII corrects this inadequacy of the set of axioms formed by schema VII. This axiom asserts that for every universal class there exists some element with no members, which is a member of some class of which that universal class is a member. Since a universal class and its null element are members of an identical class, it follows from axioms V and VI that they are members of the identical universal class.

The last axiom, axiom IX, asserts that there is some universal class. The total set of axioms generates a hierarchy of elements with the universal class of axiom IX as a sort of "foundation" of the hierarchy. It is consistent with these axioms that such a "foundation" of the hierarchy of elements might have among its members another universal class, or might contain as parts a series of such universal classes with no termination. In short, the axioms do not imply that there exist any atoms, that is, entities with no proper parts. Further, with an absolute "foundation" of the hierarchy of elements postulated, one could not infer that there was a similar "foundation" of the nonelements in the universe.

These axioms imply an endless number of universal classes, since each such class is a member of some other universal class. They do not imply, however, that there are an infinite number of elements which bear the M relation to some universal class.

We have translated "x has one and only one type" into the

statement, "x is a member of one and only one universal class." Axioms V and VI imply that if two entities bear the M relation to some whole, then those two entities bear the M relation to the identical universal class.

The notion of class inclusion can be applied only to entities of the same type; hence two *elements* in our system are related by class inclusion just when they are members of the same universal class, and all the elements which bear the M relation to one of the two bear that relation to the second. Class inclusion among elements can be defined as: "x is included in y" means that there exists a t, such that x and y bear the M relation to t, and for any z, if z bears the M relation to x, then z bears the M relation to y.

The several axioms presented in this paper generate a hierarchy of elements, such that this hierarchy has the same structure as the type hierarchy of orthodox classes. Classes, as used in logic, may be identified with elements; elements in turn may be identified with certain kinds of physical wholes.

The question of whether the hierarchy of elements actually exists in the physical world is a question outside of logic; it is a question which is correctly addressed to philosophers of science and scientists.

What we have attempted to establish in this paper is the possibility of interpreting classes as special kinds of physical wholes, not whether such wholes do or do not exist.[10]

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AESTHETIC VISION

JUST before he describes aesthetic contemplation, Schopenhauer refers to the "common way of looking at things," which a man relinquishes when he adopts the aesthetic attitude. When a man perceives in "the common way," Schopenhauer writes, he considers "the where, the when, the why, and the whither of things," whereas when he perceives aesthetically, he "looks simply and solely at the *what*."[1]

What, precisely, is "the common way" of seeing things? Some writers after Schopenhauer describe it in terms of a distinction between "seeing" and "really seeing" something. John Dewey writes:

> The eye and the visual apparatus may be intact; the object may be physically there, the Cathedral of Notre Dame, or Rembrandt's portrait of Hendrik Stoeffel. In some bald sense, the latter may be "seen." They may be looked at, possibly recognized, and have their correct names attached. But . . . they are not perceived, certainly not aesthetically.[2]

According to Henri Bergson, in ordinary vision

> we do not see the actual things themselves; in most cases we confine ourselves to reading the labels affixed to them.[3]

Similarly, according to Roger Fry,

> In actual life the normal person really only reads the labels as it were on the objects around him and troubles no further. Almost all the things which are useful in any way put on more or less this cap of invisibility.[4]

Painters talk in a similar fashion. They say that with their aesthetic vision they "really see" things, whereas most of us

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[1] *The World as Will and Idea*, tr. by R. B. Haldane and J. Kemp (London, 1957), I, 231.

[2] *Art as Experience* (New York, 1934), p.54.

[3] *Laughter*. In *Comedy*, ed. by Wylie Sypher (New York, 1956), p. 159.

[4] *Vision and Design* (New York, 1956), p. 25.

usually do not "really see" things, however intact our visual apparatus may be, and despite the fact that we do not walk about with our eyes shut.

The distinction that painters and the writers quoted have in mind is a genuine one. But the terms they use to formulate it are less rigorous and are more suggestive of mystery and paradox than they need to be. Surely it is possible to formulate the difference between "ordinary vision" and "aesthetic vision" in a more straightforward way. I suggest that the difference may be put as follows:

(1) When we see things in "the common way," our attention is directed toward the stimulus objects that appear to us, or toward what they signify, and we do not particularly notice the ways in which these objects appear. For example, when the man on the subway train reads his newspaper, he sees the marks printed on the page. But it is a fact which any newspaper reader can verify for himself that nearly always he sees in such a way that he does not notice the ways the marks appear. Perhaps the commuter has been reading the New York *Times* for a half hour five mornings each week for five years. Yet if you asked him whether, in the *Times*, a "t" appears short and squat or long and slender, or whether an "o" has a fat and jolly look or a lean and hungry look, he would not know what to say. He never noticed how the letters looked. The ordinary perceiver is like the ordinary reader. If, when he is looking at a dark cloud, you ask him what he sees, he does not reply, "It's very like a whale." Rather, he says something like "I see a dark cloud" or "I see that it's going to rain."

(2) When we see things aesthetically, our attention is directed toward appearances and we do not particularly notice the thing that presents the appearance, nor do we care what, if anything, it is that appears. Put somewhat differently, in aesthetic vision the "what" or "aesthetic object" that we attend to when, as Schopenhauer says, we look "simply and solely at the *what*," is an appearance, and the question of reality does not arise. The preceding sentence, I believe, formulates a necessary, though not a sufficient, condition of aesthetic vision.

My first task is to make (1) and (2) clear.

How a stimulus object will appear to a perceiver depends not only on the nature of the object but on the nature of the perceiver and the conditions of observation. If a penny is viewed by a "normal" observer under "optimum" conditions, that is, when the face of the penny is perpendicular to the observer's line of vision, the penny will appear, or look, round to him. If the penny is viewed from an oblique angle, it will appear elliptical. If we look at a certain dress in direct sunlight and from close by, it will appear white. If we look at the same dress when it is worn by a girl standing fifty feet away, in the shade of a tree, it will appear blue-gray.

It is only relatively rarely that, in ordinary life, we see things under "optimum" conditions. When we see pennies, it is usually from an oblique angle, one of an infinite number of possible angles from which pennies do not look round. But how a penny does look will not be noticed, if we see it merely in "the common way."[5] Commonly, when we see a penny, we are about to pay a bill or to count our change, and it makes no difference to us how the penny looks. What is important to us is that we should not mistake a penny for, say, a subway token, and our attention is directed toward the stimulus object—as it "really is"—not toward its appearance. If, later on, an occasion should arise for us to tell about what we saw in our hand or on the counter, we probably would say, "I saw a penny." And if, for some reason, we were then asked, "How did it look?" we would probably reply, "Why—like a penny." But a penny may look dull or look shiny. Under some conditions it will look round, and under most conditions it will look elliptical. To say that a penny we saw under determinate conditions looked merely "like a penny" is not to describe precisely how the penny then looked. The reply,

[5] If some epistemologist were to maintain, nonparenthetically and as a cardinal principle of his theory of perception, Gilbert Ryle's parenthetical remark that "round plates, however steeply tilted, do not usually look elliptical" (*The Concept of Mind* [London, 1949], p. 218), all I can think of to say is: either such an epistemologist usually sees titled round plates in "the common way," i.e., he usually lacks aesthetic vision; or he is using "look" in the sense in which "The plate looks elliptical" implies "On the evidence available, the plate probably is elliptical." I am using "look" in the sense in which "The plate looks elliptical" may be part of the evidence (along with "under such-and-such conditions," etc.) for "The plate is round."

"It looked like a penny," is an indication that the penny was seen in the common way—that the perceiver did not notice the way the penny looked.

The next time we see the girl in the white dress she may be standing indoors, under artificial light, beside a highly polished mahogany piano. Will we notice that now her dress, or this and that part of it, appears tinged with brown? Or will we only "see that she is still wearing the same white dress?"

The face, or the appearance, that the world presents to us is one of infinite, ceaselessly altering variety, but this is not noticed when we see it in "the common way." If we look at the world only in the common way, a penny is always round, and the girl's dress is always white. What Croce calls the *character*, or *individual physiognomy*,[6] of things will escape us. That is, the *appearance* of a penny or a dress or other object as seen under determinate conditions will not be noticed. As Thomas Reid says, it will "pass through the mind unobserved."[7]

When our attitude is aesthetic, however, appearances do not pass through the mind unobserved. On the contrary they are dwelt upon. And whereas for the so-called practical man (as for the epistemologist who is concerned to analyze the common way of perceiving) the distinction between "*appearing* so-and-so" and "*being* so-and-so" is of first importance, for the aesthetic perceiver it is of no importance. When he looks "simply and solely at the *what*," the question of reality does not arise.

To make clear what is meant by "the question of reality does not arise," let us perform an experiment in the imagination. It is the seventeenth century and we are somewhere in the Vatican, in a room where there are also two other men, a picture, and a mirror. One of the men is Velásquez and the other is Pope Innocent X. The picture is the one referred to in art catalogues as *Pope Innocent X* (National Gallery of Art, Washington). The visual apparatus of each man, the lighting conditions, and everything else are "normal."

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[6] Benedetto Croce, *Aesthetic as Science of Expression and General Linguistic*, tr. by Douglas Ainslie (New York, 1956), p. 5.

[7] *An Inquiry into the Human Mind*, ch. v, sec. 8. Cp. Roderick M. Chisholm, *A Philosophical Study* (Ithaca, N. Y., 1957), pp. 160-162.

Velásquez looks at Pope Innocent X. We may then justifiably assert, "He sees a man." Velásquez then looks at the picture, and we may assert, "He sees a picture"; and we may *deny*, "He sees a man." Next, when Velásquez turns his gaze toward the mirror, we may assert, "He sees a mirror"; and we may deny both "He sees a man" and "He sees a picture." After glancing at the picture, the pope looks into the mirror. Velásquez, who is standing a little behind and to one side of the pope, also looks into the mirror. We may still justifiably assert that Velásquez sees a mirror. Certainly the object by which he is being visually stimulated is not a man, nor is it a picture; it is a mirror.

Let us now start over again, at the point where Velásquez is looking at the pope. We ask him to describe what he sees. He begins, "I see a man. He has a mustache and small beard, and he is wearing a red robe and a red cap. . . ." Next, Velásquez looks at the picture, and we ask him to describe what he sees. He begins, "I see a man. He has a mustache and small beard, and he is wearing a red robe and a red cap. . . ." We notice that when he participates in our ideal experiment, Velásquez's description of what he sees when he looks at the picture is identical with his description of what he sees when he looks at the pope. The pope is now looking into the mirror, and Velásquez, from slightly behind and to one side of him is doing so, too. We ask Velásquez to describe what he sees. He begins, "I see a man. He has a mustache and small beard, and he is wearing a red robe and a red cap. . . ." So! His description of what he sees when he looks into the mirror is identical with his descriptions of what he sees when he looks at the pope and at the picture.

That is the experiment. Now, how shall we interpret its result—the fact that although, as we could observe, Velásquez looked at three different objects—a man, a picture, and a mirror—he gave one and the same reply every time he was asked, "What do you see?"

Some writers have correctly pointed out that when we aesthetically appreciate a portrait of a pope, we do not respond to it as if we took it to *be* a pope. But then they tend to say or to imply that if one describes what one sees when one looks at *Pope Innocent X* in the words we have attributed to Velásquez, then either

one's attitude toward the portrait is not aesthetic or the description of what one sees is inaccurate or misleading. For Velásquez said, "I see a man," when, as we noted, it is false that he saw a man, since he saw a picture. To see a man is to see something made of flesh and blood and born of parents. Unlike Pope Innocent X, *Pope Innocent X* is not made of flesh and blood and was not born of parents. Hence, Velásquez's description of what he saw is, to say the least, misleading.

This argument is cogent only if it is assumed that the object Velásquez was attempting to describe when he said, "I see a man," while he was looking at the picture, was the stimulus object, and that he was using the word "man" to mean something made of flesh and blood and born of parents. If, however, he was not using the word "man" in this sense, and if he was describing not the picture but a way in which the picture appeared to him, his description, so far as it went, was not inaccurate and need not be misleading. The way the picture *Pope Innocent X* appeared to him was very similar, and in principle might have been exactly similar, to the way the pope himself appeared to him. In principle, the appearance of a man and the appearance of a portrait of a man could be identical, in which case the accurate descriptions of each appearance would be identical.[8]

[8] I am not assuming that *Pope Innocent X* is, or was intended by Velásquez to be, a photographic likeness of Pope Innocent X—that the point in representational painting is merely to reproduce an appearance of the object depicted. One is not committed to an "imitation theory" of art just because one admits that, in principle, the appearance of a man and the appearance of a portrait of a man could be identical. Rather, one is committed to the admission that much can be learned about aesthetic vision by reflecting on what it is to see aesthetically a "work of nature," as well as by reflecting on what it is to see aesthetically a "work of art." (Consider why, otherwise, there are people so impressed by the Argument from Design.) Later on in this paper, some of my arguments might appear to have a missing premise. That premise is: for an aesthetic viewer, who describes what he sees by saying, "I see a human face," it is only an "accident" of no concern to him at the time that what he sees was made by Mother Nature (e.g., The Great Stone Face, New Hampshire) or by a man (e.g., Gutzon Borglum's mountain sculpture, South Dakota). At the same time, though this is not being argued for in this paper, an aesthetic object may be seen as "a work of art," rather than as "a work of nature." I am at present inclined to say that if one aesthetically sees the Great Stone Face as "a work of art," he is attending to a different aesthetic object from that of one who sees it as "a work of nature." Hence, if when two people are

The consideration that it is two different stimulus objects that appear in the same way is, for aesthetic vision, irrelevant. The question of reality does not arise.

Since the question of reality does not arise in *any* case of aesthetic vision, we ought not to say, when Velásquez described what he aesthetically saw when he looked at the pope himself as "a man," that he was judging the object that appeared to him to *be* a thing of flesh and blood. In this case no less than in the case of the picture he was using "man" to describe an appearance, not the object that happened to present that appearance. Hence, if it is correct to say that when we aesthetically appreciate a portrait of a pope we do not assume it to be a pope, it is equally correct to say that when we aesthetically appreciate a pope we do not assume *him* to be a pope. In every case of aesthetic vision, what is attended to is an appearance, and the question of what actual object—a picture, a mirror, or a man—presents that appearance does not arise. Perhaps this is part of what Croce meant when he wrote, "In our intuitions we do not oppose ourselves as empirical beings to external reality, but we simply objectify our impressions, whatever they be."[9] And perhaps this is the cash value of Edward Bullough's metaphor, that we achieve psychical distance by "putting ourselves out of gear with our practical needs and ends."[10]

Rudolf Arnheim, in his wonderful *Film as Art*, writes (italics mine):

> From the beginning, man has excelled in making durable but immobile pictures. Up to our own day, he has hardly succeeded in presenting motion by motion in such a way as to obtain a faithful and readily available reproduction. Even film does not meet this specification: it does not render motion by motion but *gives an illusion of it* by means of immobile images shown in sequence. . . .[11]

looking at the same painting, one says, "That is good" and the other says, "That is bad," this is not adequate evidence that a genuine disagreement in taste has occurred. The indexical symbol "that" may be referring to a different aesthetic object in the two cases.

[9] *Op. cit.*, p. 4.

[10] "Psychical Distance as a Factor in Art and an Aesthetic Principle," in *The Problems of Aesthetics*, ed. by Eliseo Vivas and Murray Krieger (New York, 1953), p. 399.

[11] Berkeley and Los Angeles, 1957, p. 162.

For several pages thereafter, Arnheim discusses technical problems involved in "rendering motion by motion." Attempted solutions to these not being very successful,

> *illusory movement* attracted the attention of inventors. They found that they could create *the impression of movement* by combining still pictures with each other.[12]

What is the point of such a discussion for the understanding of aesthetic vision? To see the point of this question, one thing to bear in mind is that an aesthetic viewer is not an aesthetic producer. From the point of view of the aesthetic viewer, what he sees on the screen is not an "illusion of motion" but "motion," not an "impression of movement" but "movement." For the aesthetic viewer of a motion picture, which virtually all of us are when we slip into our seat in the theater, the question of what is real and what is illusory does not arise. Arnheim is aware of this. He points out that

> in film, the single pictures of the sequence exist only technically, not in what is experienced by the audience. As far as the eyes of the spectator go, there is no synthesis of phases but an invisible continuum . . . the displacement of the film in the camera and in the projector is not experienced directly by the audience. It is simply the mechanical means of creating the illusion of motion on the screen, . . . the beat of the intermittent motion in the camera and the projector has no bearing upon the aesthetic rhythm of the picture.[13]

Among the many uses of perception words such as "see," one is appropriate to "the common way" of perceiving and one to aesthetic perception. Let us call the "ordinary" sense of "see" the sense that this word has when we say, when Velásquez looks at the picture, "He sees a picture" and "He does not see a man." When "see" is understood in this ordinary sense, the statement "He sees a picture" implies the statement "He is being visually stimulated by a picture." It implies some other statements as well, but for our purposes these may be ignored.

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[12] *Ibid.*, p. 163.
[13] *Ibid.*, p. 169, 181.

Let us call the "aesthetic" sense of "see" the sense that this word has when Velásquez truly says, when he is looking at the picture, "I see a man." It would be equally appropriate to call this the "phenomenological" sense. When "see" is understood in this aesthetic or phenomenological sense, the statement "I see a man" does *not* imply "I am being visually stimulated by a man (that is, by a thing of flesh and blood, born of parents, etc.)." Nor does it imply the statements "I am not being visually stimulated by a man," or "I am being visually stimulated by something," or "I am not being visually stimulated by anything." The absence of such implications reflects the fact that, in aesthetic vision, the question of reality does not arise.

If one sees in the movie theater "a wistful tramp shuffling down the road toward the sunset," one does not believe that one is seeing a real tramp shuffling down a real road toward a real sunset. Nor does one disbelieve it, either. This characteristic of aesthetic vision is sometimes described as "willing suspension of disbelief." The locution "The question of reality does not arise" seems preferable, because it is phenomenologically more accurate. As C. S. Peirce points out, "will" implies "resistance." Now, there seem to be people (poor souls!) for whom it involves effort, an "act of will," to adopt the aesthetic attitude toward movie tramps, real tramps, pictures of landscapes, or landscapes. Perhaps for them a willing suspension of disbelief is a precondition of being in the aesthetic attitude. Perhaps in order for them aesthetically to see anything, they must first "suspend" or "put out of gear" their so-called practical attitude. But when we are *in* the aesthetic attitude, we do not resist disbelieving or believing "a wistful tramp shuffling down the road toward the sunset." We just behold him doing so.

When Macbeth wondered, "Is this a dagger that I see before me, the handle toward my hand? . . . Art thou but a dagger of the mind, a false creation?" he was wondering whether the statement, "I see a dagger," where "see" has the ordinary sense, was true. If his attitude toward his hallucination had been aesthetic, if he had been absorbed "simply and solely" in the "what" that appeared to him, he would not have asked himself this

question. When a doctor says, referring to a patient suffering from delirium tremens, "He sees pink elephants," he does not use the word "see" in the ordinary sense. He uses it in a sense that resembles the aesthetic sense in that his statement, when properly interpreted, does not imply that pink elephants are visually stimulating the patient. And he uses the phrase "pink elephants" not to describe a stimulus object but to describe the patient's phenomenological object.

Similarly, when Velásquez says, when he adopts the aesthetic attitude toward the pope, the picture, or the mirror, "I see a man," his statement does not imply that he is being visually stimulated by a thing of flesh and blood. It implies that an appearance is present to him and that it is of the kind he calls "a man." He is telling us that the phenomenological object before his mind is "a man," not "a pink elephant," "a dagger," or "a pattern of lines and colors."

Perhaps it will be said that if the aesthetic object is an appearance, why not say so when we describe it? After all, if what Velásquez aesthetically sees when he looks at the picture is not a man but the appearance of a man, he *does* mislead us when he says that he sees a man. He ought to say that he sees the appearance of a man or, perhaps better, that what he sees appears or looks like a man to him.

The reason we do not talk in this recommended way when we describe aesthetic objects is that this recommended way of talking presupposes a consciousness of the difference between appearance and reality, whereas, when our attitude is aesthetic, this presupposition is lacking. If I were completely absorbed in the appearance that Velásquez's picture presents to me, I would not be aware of it as "the appearance of a man." I would be aware of it simply as "a man." Of course, when my first person statement, "I see a man," is true, someone else may make the true *third* person statement, "He sees an appearance of a man." But then the object of the verb in the third person statement, namely, "an appearance of a man," does not faithfully convey what object it is that is object of my aesthetic vision.

The situation here is similar to the following one. Suppose that

early one morning a companion and I are walking down Park Avenue and see a group of men going in the opposite direction. Suppose that my companion asks me what I see and that I reply, "I see a rather dapper elderly man walking briskly up the street accompanied by some men carrying pencils and notebooks." My companion might be in a position to assert truly, "You see a former President of the United States surrounded by reporters." It does not follow from this that, at the time that I said, "I see a dapper elderly man," I ought to have said, "I see a former President of the United States." In the same way in which I might see a former President of the United States without being aware of him as such, when my attitude is aesthetic I see an appearance that Velásquez's picture presents to me without my being aware of it as such. And if I am not aware of what I see as an appearance, I am not obliged to describe it as an appearance when I am asked what I see. The object I aesthetically see when I look at the picture, therefore, is not "the appearance of a man," but "a man."[14]

When I am looking at a picture by Breughel, I may describe what I aesthetically see by saying that the landscape recedes into the distance. If someone, motivated no doubt by the consideration that I am being visually stimulated by a picture whose surface is "really" two-dimensional, remarks that I am really experiencing or having an illusion of distance, the reply is, "That may be so, but that is not what I aesthetically see."

There are many passages in the works of Clive Bell, Roger Fry, José Ortega y Gassett, and others that suggest the following sort of objection to what is being maintained in this paper: "If your attitude were *really* aesthetic when you were looking at the por-

[14] Compare G. E. M. Anscombe, *Intention* (Oxford, 1957), sec. 20. Miss Anscombe points out that one and the same action may be intentional "under the description" X, and not intentional "under the description" Y. In *Philosophical Investigations* (New York, 1957), when Ludwig Wittgenstein discusses how one would reply to the question "What do you see?" when one is looking at the duck-rabbit, he writes, on p. 194e, "I should have replied: 'A picture-rabbit,'" and on p. 195e, "I say 'It's a rabbit.'" If, as I think is the case, in aesthetic vision what one sees is what one says (or thinks), then when one aesthetically sees "a picture-rabbit" his aesthetic object is not the same as when one aesthetically sees "a rabbit."

trait, you would not see anything describable as 'a man.' You would see 'a pattern of colors, lines, and shapes.'" The reply to this sort of objection is as follows. First, if looking at a picture and attending closely to how it looks is not really to be in the aesthetic attitude, then what on earth is? Second, when one does this to a Mondrian, one does indeed see "a pattern of colors, lines, and and shapes." But when one does this to *Pope Innocent X*, one sees "a man." The appearance of the portrait resembles the appearance of a man much more than it resembles the appearance of the Mondrian. If one tries to see the portrait as "a pattern of colors, lines, and shapes," one gets cross-eyed, as José Ortega y Gasset suggests when he refers to works that present familiar appearances as "squinting art."[15] Ortega, by the way, attempts to define aesthetic vision in terms of an "adjustment of the optical apparatus." According to him, aesthetically to see a garden, "we must withdraw the ray of vision" until what we see is "a confused mass of color," not "shrubs and flowers."[16] But, I submit, aesthetically to see the garden is not to see "a blooming confusion," but to see appearances of a familiar sort—the sort presented by shrubs and flowers.

Perhaps it will be suggested that one ought to describe what one aesthetically sees when one looks at Velásquez's portrait as a "representation of a man." To estimate the merit of this suggestion, we must first decide what is meant by "representation."

Pope Innocent X is clearly the sort of picture that most aestheticians, critics, and historians of art will refer to as a representational picture; and they will contrast it with "nonrepresentational" pictures of the sort painted by Kandinsky and Mondrian. What makes it "representational" and the latter not?

One difference between the two sorts of pictures is that when we look at *Pope Innocent X* it presents an appearance that is familiar to us from our experience of the world outside of art. In certain respects it resembles the appearances that men present to us, so that we recognize it as an appearance *of that sort*. If we wish to describe it, we borrow the term, namely "man," from the

[15] *The Dehumanization of Art and other Writings on Art and Culture* (New York, 1956), p. 23.
[16] *Ibid.*, p. 9.

thing that, outside of art, presents that sort of appearance; but, as applied to the appearance, it is not a "thing" word, for it has lost its predictive function.[17] As applied to the appearance, "man" functions in the same way that "red" functions when it refers to a quality, as contrasted with the way "red" functions when it refers to a property of physical objects. The Kandinsky composition, on the other hand, presents an appearance that is not familiar to us from our experience of the world outside of art, and we have no convenient term to borrow for the specific Kandinsky appearance *as a whole*. We have to describe it in terms of its parts—as a combination of lines, shapes, colors, and so on.

Pope Innocent X, then, may be said to be representational because it presents an appearance which as a whole is familiar because it is similar to appearances presented by objects we experience outside of art, and the Kandinsky composition may be said to be nonrepresentational because it does not. Now if this fact were a sufficient reason for saying that the appearance presented by the portrait should be described as "a representation of a man," then, I should think, it would be a sufficient reason for saying that when Velásquez aesthetically saw the pope himself he should have said, "I see a representation of a man." For the pope himself, no less than his portrait, presented an appearance similar to appearances presented by objects outside art. For the same reason, when we are sight-seeing and admire the appearance of the New York City skyline, we should describe what we are admiring not as "a skyline" but as "a representation of a skyline."

It is sometimes said that when we aesthetically see representational works of art, we recognize familiar objects. But we do not recognize familiar *objects* when we look aesthetically at representational paintings (or at the subjects of such paintings). We recognize familiar *appearances*. Our recognition then is of the sort H. H. Price has called "primary recognition." Price distinguishes between two sorts of recognition, primary and secondary, in the following way:

[17] Compare Arnold Isenberg, "Perception, Meaning and the Subject Matter of Art," in Vivas and Krieger, *op. cit.*, p. 218.

Secondary recognition [is] recognition by means of signs. Primary recognition, on the other hand, is not recognition by means of signs. It is by primary recognition that we recognize the sign-characteristics themselves—the dull grey colour which is a sign to us of lead, the blackness and the visual *gestalt*-quality which are signs to us of a raven. In earlier days, primary recognition would have been called "intuitive awareness" or "immediate apprehension," and it would have been said that a primarily recognized characteristic is something "given." It would also have been said that primary recognition is "logically" as well as psychologically immediate, whereas secondary recognition has only psychological immediacy.[18]

Thus, the recognition of physical objects—the sort that is involved in ordinary perception but which does not occur in aesthetic perception—is secondary recognition. It presupposes primary recognition, which occurs alone in aesthetic perception. Secondary recognition is "predictive," but primary or aesthetic recognition is not. Price writes:

Indeed, it would seem that most of the recognitions which interest us—unless we happen to be psychologists or painters or phenomenologically minded philosophers—have something of this character which we are tempted to call indirect, or mediate, or inferential. Even when we recognize something as a man, or a chair, or a flower-pot, we go beyond the characteristics which we actually notice the perceived object to have. In addition, we attribute other characteristics to it which we are not at the moment noticing at all; though we believe, or rather take for granted without question, that further examination of the object would enable us to notice them if we wished. For instance, when I recognize the thing over there to be a chair, I am assuming without question that it is a moderately rigid body capable of supporting a man or a pile of books, and unlikely to change its shape or its chemical constitution within the next five minutes; but the only characteristics I actually notice it to have at the moment are a certain set of colours . . . and a certain visible shape.[19]

Using Price's distinction, we may now say that when an aesthetic perceiver describes what he sees when he looks at

[18] *Thinking and Experience* (Cambridge, Mass., 1953), p. 47. Cp. Isenberg, *op. cit.*, pp. 215-216. On this and some other points, see also Arnold Isenberg, "The Esthetic Function of Language," *Journal of Philosophy*, XLVI (1949), 5-20.

[19] *Op. cit.*, p. 45.

Van Gogh's painting of his room and says, "and beside the bed is a chair," he is describing a visual gestalt which he apprehends as "a chair beside a bed" by primary recognition; but he does not assume without question that what he so recognizes as "a chair" is a moderately rigid body capable of supporting a man or a pile of books.

When, as in the case of secondary recognition, a presented appearance functions as a sign of something not present, it is sometimes said to *represent* what it signifies. It seems clear that if the analysis of aesthetic vision here proposed is correct, for an aesthetic perceiver a presented appearance does not function as a sign. Therefore it is not, and it should not be described as, a representation in this sense of the word. If this is what he meant by "representation," Clive Bell was right when he said that representation is irrelevant to the aesthetic appreciation of a work of art. All that needs to be added is that it is irrelevant to the aesthetic appreciation of works of nature as well.

Here we have a suggestion that may explain, at least in part, why some writers such as S. K. Langer speak of aesthetic objects as "presentational symbols." Some years ago, in a review, Professor Ernest Nagel objected to the concept of a "presentational symbol" on the ground that if by the term "symbol" we mean something that represents something to someone, a merely presentational symbol is a contradiction in terms.[20] Perhaps bringing forward the notion of a "presentational symbol," which does seem to be a contradiction in terms, was nevertheless an attempt to point out a genuine phenomenon, namely, that in our aesthetic perception of nature, and in much of our aesthetic perception of works of art, there are appearances which we recognize in the primary sense and which in ordinary perception would function as signs, yet which do not function as signs. Our attention is arrested and dwells upon what in ordinary perception would be a mere "sign vehicle" and scarcely noticed. It is then no longer a vehicle "representing" an object, but a "presented" object, about which the question of reality does not arise.

Clive Bell also wrote that to appreciate a work of art, we need

[20] *Journal of Philosophy*, XL (1943), 323-329.

bring nothing from life, nothing but a sense of form and color and three-dimensional space. By this he may have meant to eliminate as irrelevant to the appreciation of works of art not only appearances that were representations in the sense that they were functioning as signs, but also familiar appearances or forms—what we grasp by primary recognition. Only then, according to Bell, would a work of art evoke in us a unique aesthetic emotion. If Bell had realized that by primary recognition we are made aware of familiar *appearances*, not of familiar *objects* or *events*, and that when we attend to these appearances we are attending to something "in the picture" in precisely the same sense that lines, colors, shapes, and volumes are, would he have allowed the familiar appearances back in?

If the analysis of aesthetic vision presented above is on the whole correct, there seems to be no reason why they should not be allowed back in. If it is on the whole correct, then, contrary to what Ortega wrote in *The Dehumanization of Art*, it is false that "preoccupation with the human content of the work is in principle incompatible with aesthetic enjoyment proper."[21]

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[21] P. 9.

DISCUSSION

HOBBES'S CONCEPT OF OBLIGATION

HOWARD WARRENDER'S recent book, *The Political Philosophy of Hobbes*,[1] is a piece of careful scholarship, intelligent exegesis, and clear presentation, and also a major contribution to our understanding of Hobbes's ideas. The interpretation of Hobbes has always been full of disagreement and confusion, and Mr. Warrender's thorough examination of Hobbes's system of obligation brings real clarity to the field, clearing up many traditional difficulties and establishing a coherent framework for any further discussion of Hobbes's political theories. Warrender provides new insight into the nature and relation of the various types of obligation described by Hobbes. He shows that, according to Hobbes, we have a basic obligation to obey the laws of nature, that all our other obligations can be deduced from it, and that no new sort of obligation arises in society which did not exist in nature. After this examination of the system has been accomplished, however, there remains another problem which must be solved to complete the analysis of Hobbes's ideas. It is this problem which I should like to discuss, and it is stated by Warrender himself:

> To proceed beyond this point, however, to ask in turn, why the individual ought to obey natural law, is to make a new departure and the treatment of this problem is an addendum to, rather than a continuation of, the main argument which has been outlined in the first two Parts of this work. What has been examined above is the substructure of the obligation to obey natural law, in the sense of the pattern of consequences that derive from it; whereas the investigation of the ground of this obligation is concerned solely with its superstructure. Although the acceptance of different solutions to the question of the ultimate ground of obligation in Hobbes's theory, gives a different significance to his pattern of rights and duties, it does not in itself change that pattern, nor prejudice the account of it in the form in which it has been presented.[2]

Warrender asserts that although he will venture to make some comments on this question, he feels unsure about them, much less sure than he does about his views concerning Hobbes's *system* of obligation.

[1] Oxford, 1957.
[2] P. 278.

But he says rightly that the system can be successfully investigated without an analysis of the central concept and its grounds. So although I shall disagree with some things he says concerning the concept of obligation in Hobbes, I do not consider this a fundamental criticism of the book, since it is an issue quite separate from those to which Warrender directs himself primarily and with which he has dealt so admirably. The reason I shall frequently put my comments on the concept of obligation in Hobbes in the form of criticisms of views suggested by Warrender is that he has formulated the problems very clearly and has produced the most exhaustive and compelling arguments I have seen in support of a view in opposition to mine.

I shall attempt to show that genuine moral obligation plays no part in *Leviathan* at all, but that what Hobbes calls moral obligation is based exclusively on considerations of rational self-interest. Many people have rejected the view that Hobbes appeals solely to self-interest and have tried to reconcile the apparent presence of such a theme with a moral interpretation of Hobbes's concept of obligation. I shall try to show how such attempts fail and to produce an interpretation under which I feel his views become consistent.

One cannot miss the arguments in *Leviathan* based on self-interest. An egoistic theory of motivation permeates the entire book. I shall not attempt to trace it in detail, since the arguments are in no way hidden. They come out with particular clarity in the exposition of the laws of nature, which delineate our basic obligations and from which all others are derived. Hobbes defines a law of nature as "a precept, or general rule, found out by reason, by which a man is forbidden to do that which is destructive of his life, or taketh away the means of preserving the same; and to omit that by which he thinketh it may be best preserved."[3] He then goes on to derive nineteen such laws, and the justification of every single one of them is based on the argument that disobedience to the law will lead men into the state of war, which is for every man a dreadful prospect.

The egoistic theory of motivation is clearly expressed in Hobbes's explanation why certain rights are inalienable. "Of the voluntary acts of every man, the object is some good to himself. And therefore there be some rights which no man can be understood by any words or other signs to have abandoned or transferred. As first a man cannot lay down the right of resisting them that assault him by force, to take

[3] *The English Works of Thomas Hobbes*, ed. by Sir William Molesworth (London, 1839-1845), III, 116-117. All references to Hobbes are to this edition.

away his life; because he cannot be understood to aim thereby at any good to himself."[4] The stipulations about what sorts of covenants one can and cannot be conceived to have made, when a covenant becomes void, when one is obliged to perform and when not, can, I think, be looked on as the construction of a practice of covenants in which it is possible to take part without ever acting contrary to one's own interests, and one which it is consequently possible for men to adopt. I think that it is a mistake to feel that because the right of self-defense sets a limit to obligation, it implies the understanding that there exist some truly moral obligations which must be so limited. It can be thought of merely as a logical consequence of Hobbes's self-interested concept of obligation. In Hobbes's language, it is one's moral obligation to follow the dictates of reason toward self-preservation and longer life. Certain acts, self-destruction for example, can never serve as means to self-preservation. Therefore killing oneself or not protecting oneself against harm can never be morally obligatory.

Warrender feels that there are in Hobbes two separate systems, a theory of motivation and a theory of obligation, the former having self-preservation as the supreme principle, based on the fact that all men will regard death as their greatest evil, and the latter based on the obligation to obey natural law regarded as the will of God. He explains the egoistic appearance of the theory of obligation on the grounds that it must be consistent with the theory of motivation, but he claims that self-preservation is a "validating condition" of obligation and not a ground of obligation. He defines such a condition as one which must be satisfied if a ground of obligation is to be operative.[5] Common examples of validating conditions are such things as sanity and maturity, which, although they certainly do not constitute grounds of obligation, must be present in an individual before he can be obliged.

Warrender expresses his purpose in the statement that "If the fundamental principle which the individual is obliged to follow is one which enjoins peace rather than self-preservation as such, his duties are given a more social and less self-regarding appearance."[6] He thinks it can be shown that Hobbes does not feel that we are obliged primarily to insure our own preservation.

In support of this he argues first that according to Hobbes we have a right to self-preservation; but right and duty are in the same matter

[4] *Ibid.*, p. 120.
[5] Warrender, p. 14.
[6] *Ibid.*, p. 218.

inconsistent, because right is the liberty to do or forbear, the absence of obligation. Therefore we cannot have a duty to self-preservation.[7] But I maintain that Hobbes's position is not nearly so clear as this; that it appears in fact to be self-contradictory. For on the first page of Chapter 14, Hobbes makes the following sequence of assertions: first, that the right of nature is the liberty that each man has to preserve his own life; second, that a law of nature is a precept by which a man is forbidden to do what is destructive of his life, or to omit that by which he thinks it may be preserved; third, that since right is the liberty to do or forbear, whereas law binds you to do one particular thing, law and right differ as much as obligation and liberty, which are in one and the same matter inconsistent.[8] I confess that I do not know what is intended, but I do not think that it is possible on this basis to show that Hobbes felt we do not have an obligation to preserve ourselves.

Warrender argues also, "If self-preservation were meant to be taken as the principal duty of each individual, one would expect Hobbes to have regarded the precept that we should defend ourselves as a law and not as a right, and that we *ought* to use the advantages of war where peace is unobtainable. As his words stand, however, the fundamental law of nature is not 'preserve thyself,' but 'seek peace,' and the further laws of nature are derived from the latter precept."[9] Warrender wishes to interpret the laws of nature not as maxims for individual preservation but as principles for the constant preservation of men in multitudes, based on concern for the conservation of society or of men in general. This makes him discount the ample evidence to the contrary. He realizes, for instance, that after listing the laws of nature Hobbes says that there are other things tending to the destruction of individuals which are also forbidden by the law of nature. He says they are not here relevant, since the discussion is about civil society. This indicates that the basic precept of the laws of nature is self-preservation and not preservation of society, but Warrender claims that these self-destructive actions can be considered harmful to the community, through destruction of the rational faculties, and so forth. I do not deny that they can be so considered, but I do not think it plausible that Hobbes considers them contrary to natural law for that reason alone.

Warrender admits also that at times Hobbes describes the laws of

[7] *Ibid.*, pp. 214-215.
[8] Hobbes, III, 116.
[9] Warrender, p. 216.

nature as precepts by which a man is *forbidden* to do that which is destructive to his life. But he says that this is not an accurate statement of Hobbes's position, and that he is more accurate when he calls them the articles of peace. This can certainly not be decided on the basis of the relative frequencies of the two descriptions. He sees that the laws which Hobbes lists as the fundamental obligations of man all bear directly on society and the general welfare. And it is a strict system of laws, not just a collection of random advice. I do not wish to deny this, but it seems to me that Hobbes derives them carefully from considerations of individual self-interest. It is the fact that the laws of nature are on the surface typically moral precepts, which inclines Warrender to deny that they are prudential maxims which each man should obey for his own sake.

He gives the following explanation of the role of self-interest in Hobbes:

> The laws of nature, that command the individual to seek peace, keep covenants, etc., are from one point of view rational maxims for self-preservation; and one answer to the question of why the citizen should obey the civil law, is that obedience constitutes the best means to his preservation. . . . This answer, given in terms of self-preservation, however, is concerned with motive and not with obligation . . . this consideration does not ensure their obligatory character; it is only in their aspect of being commands of God that they are laws and hence oblige. Thus the reason why I *can* do my duty is that I am able . . . to see it as a means to my preservation; but the reason why I *ought* to do my duty is that God commands it.[10]

Warrender interprets Hobbes as saying that there is a class of actions to which men can be prudentially motivated, a subclass of these which tend to self-preservation, and a subclass of these which tend to peace and not merely to the individual's self-preservation. These last can be considered the commands of God and consequently obligatory, because we are previously obliged to obey Him and not because they are conducive to self-interest. I shall discuss first what Warrender says about self-interest in Hobbes, setting aside temporarily his contention that the ground of obligation lies in the command of God.

Warrender inserts into Hobbes's moral doctrine certain validating conditions of obligation which he says are made necessary by Hobbes's egoistic theory of will, feeling, like Taylor, that Hobbes's obligation can retain a moral sense if a separation is made between the two theories of obligation and of will. He says that what a man cannot,

[10] Warrender, pp. 212f. This division is also made by A. E. Taylor, "The Ethical Doctrine of Hobbes," in *Philosophy*, XIII (1938), 408.

according to Hobbes, be obliged to do derives from an analysis of what is implied in being obliged. Any law, to oblige, must satisfy the validating conditions for obligation, which "may be summarized by the statement that the individual cannot be obliged where this is logically impossible."[11] Among these are the conditions that the law must be knowable, that the author must be known, and that if a man is in serious danger of death, he is excused if he acts against the law to save himself. I would certainly agree with everything that Warrender says up to this point, but I disagree with his claim regarding the source of these validating conditions. He says that the last condition derives from the logical fact that, to be obliged, a person must be capable of having an adequate motive to obey the law (which he claims is involved in the notion that ought implies can), plus the empirical fact that since men perform only those actions which they believe to be in their own best interest, only in very rare circumstances can anyone have an adequate motive to contribute to his own destruction or not to resist others in their attempts on his life. All obligatory actions must be at least *capable* of being regarded by the individual concerned as in his best personal interest; therefore self-destruction and the like are never obligatory. This is Warrender's way out of saying that self-interest is the ground of Hobbes's obligation.

But is this condition really, as Warrender says, a logical extension of the belief that ought implies can? It may perhaps be admitted that if someone were incapable of having an adequate motive to do a certain thing, then he could be said to be *unable* to do it. It might even be that we should for this reason absolve him from obligation to do it. If someone with a pathological fear of water stands by while another person drowns, we may be less hard on him than we should be on a normal individual, though I do not think that the sense in which it may be said that he cannot act otherwise is the same as that involved in "Ought implies can." When we say, "He couldn't have done it; therefore he wasn't obliged," we usually mean to point out that even had he wished to do it, he would not have succeeded. He is excused from failure to act because his failure was no indication of his wishes.

But the person who is so afraid of water that nothing can motivate him to enter it may be, in other respects, quite normal morally, and subject to all the usual sorts of obligations. Consider, on the other hand, the case of the Hobbesian man. He can do something voluntarily only if he thinks it is in his own best personal interest. There are certain

[11] Warrender, p. 94.

self-destructive actions which are incapable of being regarded as in his best personal interest, so they are impossible for him as voluntary acts. Warrender feels that if this is true of someone, then he cannot be obliged to perform those acts.

I feel that there is a difference between this case and that of the hydrophobe. This difference is obscured if we consider only those actions to which the Hobbesian man can *never* be sufficiently motivated. It seems then very similar to a phobia for some particular set of actions. But these few actions which he can never perform voluntarily constitute only a small part of the Hobbesian man's malady. He can never perform *any* action unless he believes it to be in his own best interest. Unlike the hydrophobe, who has a small kink in the cloth of his moral behavior, the rest of which is quite normal, the Hobbesian man is incapacitated not only in relation to a few specific actions.

We may ascertain that the hydrophobe understands moral obligation by observing his behavior in ordinary circumstances. If he is prepared to sacrifice his own interests somewhat in order to keep promises, help people in distress, and so forth (so long as the performance of duty does not involve his entrance into water), then we know that he has a moral sense. But we have no such behavior on which to base a similar judgment of the man who never acts contrary to his interests. His case is not that of an otherwise normal individual who is incapable of a few isolated actions. The fact that the egoist is totally incapable of a few specifiable actions is only one aspect of his incapacity for a whole way of behaving. He is susceptible only to selfish motivation, and is therefore incapable of any action which could be clearly labeled moral. He might, in fact, be best described as a man without a moral sense.

Warrender's and Taylor's admission of Hobbes's feeling that no man can ever act voluntarily without having as an object his own personal good is the ruin of any attempt to put a truly moral construction on Hobbes's concept of obligation. It in a way excludes the meaningfulness of any talk about moral obligation. It deprives it of any room to work. Moral obligation is something that plays a part in deliberations, and it has an influence in situations in which a person might not perform an action if he considered only his own benefit, whereas the consideration of a moral obligation, to help others, for example, leads him to do it anyway. Nothing could be called a moral obligation which in principle never conflicted with self-interest. But according to the theory of motivation which Warrender attributes, I think correctly, to Hobbes, the only thing by which men are ever

motivated is the consideration of self-interest. So a genuine feeling of moral obligation can never play a part in their deliberations. And if Hobbes acknowledges as a factor in human motivation anything which he *calls* moral obligation, then it must be some consideration of self-interest.

It is Warrender's view that our obligation to the laws of nature derives from a duty to obey the commands of God. This functions both as an explanation of the final ground of obligation and as a refutation of the position that obligation in Hobbes is based on self-interest.[12] The statement of Hobbes on which he bases his interpretation is the following remark about the laws of nature, which follows his development of them:

> These dictates of reason, men use to call by the name of laws, but improperly: for they are but conclusions, or theorems concerning what conduceth to the conservation and defence of themselves; whereas law properly is the word of him that by right hath command over others. But yet if we consider the same theorems as delivered in the word of God, that by right commandeth all things, then are they properly called laws.[13]

It is based on Hobbe's definition of law: a law is a command addressed to one previously obliged to obey the commander. So if we are to call the laws of nature laws, they must be the commands of someone to whom we are previously obliged, and who can this be but God?

Warrender interprets this (and I want to make it clear that this is just an interpretation) as meaning that only as the commands of God are the laws of nature *obligatory*.[14] He says that for the atheist the laws of nature in the state of nature, and consequently in society as well, are just prudential maxims, guides to his preservation, but that he cannot consider them as laws because they are not the commands of someone to whom he acknowledges a duty to obedience, and consequently they cannot be said to *oblige* the atheist. Warrender accuses those commentators who identify Hobbes's whole theory of morals and politics virtually with this atheistical viewpoint of passing over the assertion that the natural laws are laws as they proceed from God. But

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[12] It is to be found in Taylor, and some of the relevant arguments are made by Michael Oakeshott, *Hobbes's Leviathan*, edited with an introduction (Oxford, 1946).

[13] Hobbes, III, 147. This view is expressed in several places throughout Hobbes's writings. See also *Leviathan*, III, 251; *De cive*, II, 49-50; *De corpore politico*, IV, 109.

[14] Pp. 97-98.

he is mistaken. Nowhere does Hobbes say that only the commands of an authority can be *obligatory*. All he says is that only the commands of an authority can be *laws*. This is all that is maintained in any of the passages cited by Warrender to support his view, nor have I been able to find anything more in Hobbes's writings. There is a difference between denying that they derive their status as *laws* because they proceed from God and denying that they derive their *obligatory* status because they proceed from God. I wish to deny the latter and to maintain that Warrender has no grounds in Hobbes for affirming it. I think it quite consistent with Hobbes's system to say that the laws of nature can be considered the commands and laws of God, but I do not think that saying they have this sort of obligation is in contradiction to the notion that Hobbes's primary ground of obligation is prudential. I believe that he considers even our obligation to obey God a prudentially grounded one. I shall not say more on this point until later on. But at any rate, this is not to claim that Hobbes was an atheist or that he thought that no obligations could derive from God's commands.

Hobbes is in the passage in question drawing some sort of distinction between the laws of nature as maxims of prudential behavior and as the commands of God, but it may be nothing more than the unimportant distinction, based on the definition of law, that only as the commands of someone in authority *can they be properly called laws*. (These are Hobbes's own words.) We are obliged to obey them in several ways: basically on prudential grounds, but also as the commands of God and of the sovereign, though these also reduce, I believe, to a prudential basis. My interpretation is that after developing the laws of nature he makes, as an afterthought, a comment on usage; he says that his calling these precepts "laws" is not strictly correct, since only the commands of an authority are properly called laws.

Warrender feels that the distinction being drawn is that as prudential maxims they are not obligatory while as laws they are. The only thing which I can imagine might be construed as favorable to the view that Hobbes has this in mind is the distinction drawn between counsel and command, in Chapter 25 of *Leviathan*, where Hobbes says that a man can be obliged to obey a command which is uttered only for the commander's benefit, "But he cannot be obliged to do as he is counseled, because the hurt of not following it is his own."[15] There is nothing else in the entire book similar to this passage, nothing to indicate a belief on Hobbes's part that obligation could not be derived

[15] Hobbes, III, 241.

from self-interest. But this one passage seems to imply that the ground of obligation cannot be self-interest but must be the authority of a commander. It seems to imply, in fact, that one cannot be obliged to obey any precept for which the hurt of not obeying is one's own. This would entail that one could not be obliged to obey the laws of nature, so that this interpretation of the passage involves a result so drastic that it is not to be accepted lightly. I think that if we consider the passage more closely, however, it will be seen why this restriction need not apply to the laws of nature.

"A man may be obliged to do what he is commanded, as when he hath covenanted to obey," writes Hobbes, and he says that if one covenants to obey counsel, "then is the counsel turned into the nature of a command."[16] Hobbes is describing a difference between two types of imperative utterance. (The chapter concerns counsel and the position of counselors.) He says that if we obey a man's counsel it is because we want to, and if we are obliged to obey him, then we do not do so because we happen to consider each of his commands to be in our own interest, but because we are obliged to obey *him*, so it is no longer counsel but command. He is analyzing the concepts of counsel and command in terms of the very different sorts of reasons for which we obey the two sorts of imperatives. In one case we obey because the individual precepts seem to us directed to our own benefit; in the other case we obey because we are obliged in general to obey the precepts of that particular individual. But this does not exclude the possibility that our general obligation to obey him whom we have covenanted to obey is based finally on self-interest. All that is meant, I think, is that it is logically excluded that we should be obliged to do whatever someone tells us and that it should at the same time be called counsel. This can apply as well to the commands of God as to those of the civil sovereign. But is is quite irrelevant to the obligatory status of anything other than imperatives uttered by a person of some sort. Hobbes does not claim, as Warrender seems to think, that the only possible source of an obligation to do something is that it is the command of someone in authority. He is just making a mild grammatical observation of somewhat restricted scope.

It is possible to think of the laws of nature as something other than either command or counsel. Warrender feels that to call them prudential maxims is to classify them as counsel, and so to make them necessarily nonobligatory in Hobbes's system. But when Hobbes

[16] *Ibid.*, p. 241.

speaks of counsel, he means the counsel of some particular person. Hobbes would not, I think, deny that a set of maxims like the laws of nature, although not being commanded by anyone to anyone, could still be obligatory. In fact, I believe that he considers our basic obligations to be not to authority but to a set of principles, the laws of nature, and that our obligations to authority derive from these.

If, however, I deny that God is the ground of obligation, what can I say about the position which God occupies in Hobbes's theory in relation to the laws of nature and the obligations of men? I believe that He plays several roles.

One is that of the omnipotent ruler of the kingdom of God by nature, of whom Hobbes speaks in Chapter 31. His subjects in this kingdom are those who believe that He exists and governs, with rewards and punishments for obedience and disobedience. He promulgates His laws by the dictates of natural reason, by revelation, and through prophets. Hobbes claims that His right to reign and our obligation to obey Him have nothing to do with His having created us and our consequent gratefulness to Him but springs solely from His irresistible power. He says that it is just as if one man in the state of nature had had the power to subdue all the rest by himself. Since every man in the state of nature has a right to all things, this man could just have taken over. The only thing that prevents this from happening in fact is that no man is that strong, so that the establishment of a sovereign requires that all others lay aside their right to all things. "Whereas if there had been any man of power irresistible, there had been no reason why he should not by that power have ruled, and defended both himself and them according to his own discretion. To those therefore whose power is irresistible, the dominion of all men adhereth naturally by their excellence of power; and consequently it is from that power that the kingdom over men, and the right of afflicting men at his pleasure, belongeth naturally to God Almighty; not as creator, and gracious; but as omnipotent."[17] What could be clearer? We must obey, or else. One might even consider God Himself as being in the state of nature. But He is in no danger in the war of all against all, so He need not follow those laws of nature drafted as principles by which weaker individuals might preserve and lengthen their lives. We possess a duty to worship God, says Hobbes, "By those rules of honour that reason dictateth to be done by the weak to the

[17] *Ibid.*, p. 346.

more potent men, in hope of benefit, for fear of damage, or in thankfulness tor good already received from them."[18]

Warrender admits that this interpretation fits in well with the theory of human motivation but claims that it does not properly acknowledge the truly moral tone of Hobbes. Whether there is, as Warrender and A. E. Taylor maintain, a truly moral tone in Hobbes is a view which I consider quite open to question. But whatever truth it may contain, it cannot change the strictly prudential sense which the concept of obligation has in his system.

Another role which God plays is that of the cause of all things. All men's desires, passions, and appetites are caused in the last analysis by God's will, so that their actions actually proceed by necessity. In this sense, "When we ascribe to God a will, it is not to be understood as that of a man, for rational appetite; but as the power by which he effecteth every thing."[19] By controlling our individual desires he controls our collective actions. In Chapter 17 Hobbes describes how this works with social animals like bees. They can act together for the common good just by following their own private inclinations. But man, who is a proud and critical being, must devise principles of civil government in order to live in this way. Nevertheless, even these dictates of reason, and the basic desires from which they are derived, are present in human beings by the will of God. Since according to Hobbes we can act only in what we take to be our interests, and all our actions are determined by the will of God, we can be said to have an obligation to obey only in the far-fetched sense in which stones might be said to have an obligation to roll downhill. And this is not in any sense a moral obligation. Or if we forget about the deterministic side of the theory, we might say that men have an obligation to seek their own benefit in certain ways devised by God (by following the laws of nature and setting up civil society), which are rationally the best ways, and consequently the ones by which, acting selfishly, men will be acting in the public interest. But this again is not a moral obligation. The reason an individual chooses to obey the laws of nature will still be totally selfish.

The one role, at any rate, which I wish to deny that God plays in Hobbes's theory of obligation is that of the ground of moral obligation, which Warrender and Taylor have claimed resides in His word. The obligation to obey God does not seem to me to occupy the central

[18] *Ibid.*, p. 350.
[19] *Ibid.*, p. 352.

position in Hobbes which Warrender attributes to it. Warrender argues that all moral obligation is based on the natural law, and that the laws can be obligatory only in their status as the commands of God, to Whom we are previously obliged. He says that the question becomes finally whether the ultimate, unquestionable appeal regarding what our obligations are is to be made to the authority of a person or to that of a rule. Even leaving aside the contention that it is not a system of moral obligation at all, it seems to me clearly based far more on laws than on commands. The laws of nature are obligatory by themselves. They may also be the commands of God, and may derive some obligation from that. But Hobbes does not derive them by saying, "We are obliged to do whatever God commands; he has commanded these laws; therefore these are our basic obligations." He says that the laws of nature are immutable and eternal because war will always destroy life and peace will always preserve it, not because God will never change His instructions.[20] It is a mistake to say that God is the ultimate appeal for Hobbes, for, if that were so, then all things which He ordered would be of equal obligatoriness, and whenever He changed his orders, our obligations would change. The essentials of Hobbes's system are a set of principles concerned mainly with the preservation of human society, and if those principles were changed, it would not be the same system.

I feel also, although with some uncertainty, that a system of obligation which has at its apex the authority of a person, and not a principle, cannot properly be called a moral system. I wish to mention this point (although I shall not discuss it thoroughly) because Warrender believes that in establishing this sort of ground for Hobbes's concept of obligation, he is showing it to be *moral* obligation. When it is a legal system that is under examination, then the question of whether the apex is a law or a person is certainly present. We settle it by observing what people in the system finally appeal to. But if it is a moral system, and the final authority turns out to be a person, I am inclined to say that it is not really moral at all. This is not because I feel that this sort of appeal must be based on self-interest or fear. When a father says that a child should do something "just because I said so!" he need not be referring to any physical sanctions attached to his commands, but to simple, basic, personal authority. Many people, as Warrender has pointed out, feel this to be the only ground of obligation, and they act upon it in ways very similar to those in which I act on what I take to

[20] *Ibid.*, p. 145.

be the grounds of obligation. The strength of feeling is no less in the one case than in the other, and guilt and blame and praise play similarly active roles in both sorts of discourse. I wish to deny that the other sort is properly called moral, partially because rational consideration and human feeling play no part in it in deciding what is right and what is wrong, and also because of the possibility that such a belief should result in the person's accepting as moral laws a set of precepts completely different from those which I accept as moral, since it is possible that the being whom he feels obliged to obey may command anything whatever, and it will then be moral law. It is part of the concept of morality that certain precepts must be included in a system of rules if we are to call it a moral system. There must be precepts concerning kind and fair treatment of others, precepts against inflicting unnecessary suffering, and so on. Nothing can be called a ground of morality which admits the possibility that these precepts might not be among our obligations.

I think I have shown that, in the system of obligations which is developed in *Leviathan*, what Hobbes calls moral obligation is based entirely upon self-interest. Not once in *Leviathan* does he appeal to concern for others as a motive, but always to self-interest. Yet he is clearly interested in the welfare of humanity; the book is directed at the problems of society. One might even wish to say that these are moral feelings on his part, and that they are in a sense expressed in the work. But I think that one must consider this moral aspect of Hobbes's sentiments as something quite separate from the system which he propounds. His theory of motivation, according to which men act for none but selfish reasons, precluded his writing a hortatory work which appealed to altruistic motives. So the *Leviathan* tells men how they may act in their own best interests, such that if all of them act in the same way, they will all benefit together. If Hobbes had proved that certain institutions and practices promoted the general welfare, and had then said that every man was obliged to work for their establishment regardless of whether they happened to be in his own particular interest, then the concept of obligation involved could be called moral. But nothing of this sort is said. Given Hobbes's theory of motivation, one cannot expect to find reference to genuine moral obligation in a book in which he is trying to convince people to do certain things; and this, I believe, is why Warrender's attempt is bound to fail. The temptation to try comes from the idea that Hobbes must have felt morally about the matter to write a book like

this, which is quite possibly a reasonable conclusion. But questions about Hobbe's feelings must not be confused with questions about the sense of his text.

Warrender feels that Hobbes needs to be saved from the stigma of having based his arguments for political obligation upon self-interest. I myself do not feel that there is anything strange about basing a system of political *theory* on considerations of self-interest and justifying various governmental institutions and practices by Hobbes's methods. I agree that to call it, as Hobbes does, a system of moral obligation is a mistake. As an attempt to analyze moral concepts *Leviathan* fails. But if one wishes to construct a system of social and political behavior which it is hoped all men may find it feasible to adopt, it seems natural to appeal to the sort of far-seeing, rational self-interest on which Hobbes bases his system. And it is very important to differentiate between this sort of appeal to self-interest and another sort. When Hobbes says that a law of nature is "a precept, or general rule, found out by reason, by which a man is forbidden to do that which is destructive of his life, or taketh away the means of preserving the same; and to omit that by which he thinketh it may be best preserved,"[21] one might feel entitled to say that the laws of nature are equivalent to the one command, "Preserve yourself." And this strikes one naturally as a very odd general precept on which to found a social system. As we would ordinarily understand the simple precept "Preserve yourself," if everyone followed it the result would be essentially Hobbes's war of all against all, with all men striving only for their immediate benefit, to the general detriment of mankind. One might obey it by getting a gun and shooting anyone who obstructed one's interests. But realizing this, and realizing most importantly of all that the strongest human motivation he has to work with is self-interest, Hobbes tries to discover what men can do with this motivation which will better their state by extracting them from the war of all against all. His laws of nature are precepts which take into account that men in the state of nature striving just for their individual good, unlike the bees, do not produce an optimum state of affairs in terms of human security and survival. The laws of nature do not enjoin men to renounce the basic motivation to seek their own immediate benefit. They urge the establishment of conditions such that the results of men's acting from this same motivation will differ from the universal condition of war. And they contain qualifications to insure that in no case can adherence to them be

[21] *Ibid.*, pp. 116-117.

opposed to the self-interest of the particular individual. That is, it is not the case merely that if all men follow these rules, the result will be to the general good, but also that a single man following them, even if no one else does, will not jeopardize his own welfare. Therefore it is to every man's advantage to follow the rules; they are in fact the best and most rational way in which a man can act in his own interest. So it is in a sense true to say that they amount to the precept "Preserve yourself," but this is also very misleading. Taken as the essence of a set of rules "dictating peace, for a means of the conservation of men in multitudes," it is quite different from the same injunction addressed to just one individual. There are at least two sorts of appeal to self-interest in the justification of the adoption of a set of rules for behavior. And one is far more refined than the other and has an important application in the construction of political systems.

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ON KNOWING

SUPPOSING that "know" is used to signal evidence in the way that "probable" is, or that it is used to signal confidence in the way that "certain" is, are two of the conceptual errors which have led philosophers to deny that we can really know anything beyond what is logically true.[1] These errors are not the sole or perhaps even the central source of that view, but they need to be marked more clearly than they have been. It is worthwhile to attend to such errors though that kind of skepticism is not heard much nowadays. This silence is due, I think, only to its being so obviously true that we do properly claim knowledge of empirical matters. The important thing, philosophically, is not that the obvious be admitted but that it be understood.

2. Whether it is a matter of fact or a matter of logic, we can never support our empirical statements with demonstrative proofs. The notion that only such evidence warrants a claim to know issues quite naturally from the following course of reflection.

We commonly say we know something in order to contrast our position with that of someone who is merely guessing or for whom something is merely likely or probable. "I know that" belongs to that group of expressions with which one can preface an assertion to signal the nature of his grounds for so asserting. It differs from other expressions of that group like "I guess that," "It's likely that," "It's probable that," in indicating specially superior evidence. Just how superior can be brought out in this way: if a person's grounds prove not as indicated by his "guess," "likely," "probable," we mark the fact by saying that he was not guessing, it was not likely, it was not probable. We do not attack the signal in this way simply because the assertion proves incorrect. It is perfectly acceptable to say: "He was guessing, and as always incorrectly." "However things have turned out, it was likely." "It was probable; how could anyone have anticipated this?" We do sometimes say, not that it was probable though it did not happen, but that it seemed to me probable, or he thought it was

[1] When I say expressions are used as signals I mean, in Urmson's words, "they themselves have not, in such a use, any descriptive sense but rather function as signals guiding the hearer to a proper appreciation of the statement in its context, social, logical or evidential." J. O. Urmson, "Parenthetical Verbs," *Mind*, LXI (1952), 495.

probable. In saying that something seemed probable we do not ordinarily mean to deny that it was probable. The contrast of "It seemed probable" is not with "It was probable," but with "It is probable." Only one of two things is conveyed by saying that it seemed probable to him but it was not: either he was aware of nothing which really made it probable but his deficient sense of the weight of evidence led him to say it was probable; or he really had much less evidence than he thought he had, that is, most of his reasons for saying it was probable were themselves false. So whenever we use "seemed probable" in contrast with "was probable" we intend to deny that the evidence was as claimed, while allowing that the person thought he had the required evidence. In general, to deny that something was a guess, was likely, or was probable, is to deny that the evidence was as claimed. Therefore, in assessing the force of "know," what one must look to is the elementary conceptual truth that no one can be said to know what is not so. If someone claims to know that S is P and it proves that S is not P, we deny that he knew, that his evidence was as claimed. It follows directly that a person may claim to know that S is P only if he has evidence which entails that S is P. In short, the possession of the evidence signaled by "guess," "likely," "probable" is compatible with error while that indicated by "know" is not.

I do not know of any skeptic who has said precisely this, but I believe it is behind much of what the skeptics have said. Some of their critics have argued that the demand for demonstrative evidence originates in a simple failure to notice that there are different senses of "possible."[2] Of course, it is said, we can claim to know that S is P only if it is impossible that S is not P, but how gratuitous and mistaken to suppose that something is impossible only when it is logically impossible in itself or on the evidence. All that is necessary is that it be impossible in some other, relevant sense. I think it likely that some skeptics have construed "possible" as they have because they believed logically conclusive evidence was required for knowledge and not the reverse. Norman Malcolm says that "know" indicates evidence like that indicated by "probable" in not amounting to a demonstration but utterly different in degree.[3] But if this were so, ought there not to be a use for "He knew but was wrong"? It has also been said that skepticism

[2] See Norman Malcolm, "Certainty and Empirical Statements," *Mind*, LI (1942), 27-32; or A. D. Woozley, *Theory of Knowledge* (London, 1949), pp. 181-185.

[3] Malcolm, *op. cit.*, p. 37.

has a source in a simple error in logic.[4] The skeptic is supposed to argue directly from a truism, that if someone knows that S is P, it is logically necessary that S is P, to the fiction that someone knows that S is P only if S is P is logically necessary in itself. Perhaps some skeptics have been deeper than that. They are indeed fascinated by the truth that "X knows that S is P" entails "S is P." But if you assimilate "know" to the pattern of "guess," "likely," "probable," then that truth has, mediately, the consequence the skeptic says it has.

Drawing attention to the performative aspect of "know" is not helpful in this connection. No doubt, "When I say 'I know,' I *give others my word:* I *give others my authority for saying* that 'S is P.'"[5] But the difference between "I know" and "Take my word for it" is, partly, that I can properly say the first only if I have grounds of a certain weight, while I may say the last if I am just prepared to accept the responsibility of being wrong. I can claim to know only if I am in a position to know. Now we indicate that someone was not in a position to warn, order, guarantee, threaten, by saying that he did not really warn, order, guarantee, threaten. But if you prove to be wrong, you did not really know. Being in a position to claim knowledge is therefore a matter of having logically conclusive evidence. Or if being correct is not a part of being in a position to know, as performing is not a part of being in a position to promise, ought there not to be a use for "I knew but was wrong," as there is for "I promised but did not perform"?

3. If comparing the known with the merely probable is misleading, so too is comparing the known with the merely believed. The chief thing here is that we cannot be mistaken in signaling degrees of confidence. Saying that one is of the opinion that S is P when one is really sure, or saying that one is certain that S is P when one merely believes it, involves a kind of impropriety whether or not the accompanying assertion is correct. We regard ourselves as having been misled, deliberately or through carelessness, if someone says he is sure when he is not. We are not similarly offended when a guess proves mistaken. Mistakes are only human, after all, but a bogus signal of confidence cannot be alibied by claiming to have erred; a use can only be contrived for "I thought I was of the opinion," "It seemed that I thought," "I had the impression I was certain." So the skeptic may argue: "As no one can rightly say he believes unless he does believe, no one can

[4] See A. J. Ayer, *The Problem of Knowledge* (Edinburgh, 1956), pp. 25-26.

[5] J. L. Austin, "Other Minds," *Proceedings of the Aristotelian Society*, Supplementary Volume XX (1946), 171.

rightly say he knows unless he does know. No one who has proved mistaken can have properly claimed knowledge. But a person may be perfectly certain that he knows when he does not know, when he is mistaken. It follows that we ought never to claim to know, for we may always merely think we know. Nor can anyone say that he does not think that he knows, but knows that he knows. Persons have merely thought they knew this as well."

H. A. Prichard observed that this is the worry which set Descartes looking for a test with which he could distinguish knowing from merely believing or thinking he knew.[6] Prichard also correctly noted that this was a vain search—but not for the reason he thought: "And it is obvious that if there is to be such a thing as knowing that we *know* something, that knowing can be attained only *directly*, we in knowing the thing knowing directly, either at the same time or on reflection, that we are *knowing* it."[7] This is to say that no one is ever really mistaken about whether he knows or not, and that is false. Sincere, careful persons have claimed to know the opposite of what other equally sincere and careful persons have thought they knew. The real reason that there is no point in looking for a test is that a person who thinks he knows when he does not has no way of telling that he does not really know. The skeptic is right about that. But he is wrong to conclude that we never properly claim knowledge. That is only so if it is assumed that "know" shares the logic of signals of confidence like "opine," "think," "certain."

4. The temptation to suppose that "know" signals evidence in the way that "probable" does, or that it signals confidence the way that "believe" does, is very strong. We cannot allow that someone knows if his evidence is inconclusive or if he is not sure. The difficulty is to see why indicating conclusive evidence and this utter certainty has its own logic. To understand this will be to see how we can claim to know without logically conclusive evidence, though no one can be said to know what is not so. And it will be to remove the temptation to say we have no right to claim knowledge because others have thought they knew and have been wrong.

5. What counts as conclusive evidence is a matter of tacit, continuing agreement among the users of the language. We learn early that we are not to claim knowledge unless we have met certain requirements in the way of qualifications and evidence. These requirements are

[6] H. A. Prichard, *Knowledge and Perception* (Oxford, 1950), pp. 86-95.
[7] *Ibid.*, p. 94.

founded chiefly on what grounds have proved adequate almost all of the time. Not exactly all the time; considerations of convenience have a place. In a trial, everything that is logically relevant is not a subject for inquiry. Some things are simply noticed judicially, others admitted; in general, inquiry goes only to what can be doubted. It is much the same in the ordinary course of allaying doubt. There must be a stop to investigation and to taking measures against the chance of error. We want always to be correct but not at the price of endless checking and hedging. Considerations of reliability are always of the first importance, of course. In some areas the best available evidence is not enough and there we speak of matters of opinion, subjects for conjecture. But to mark something as a matter of opinion is only a different way of putting a stop to inquiry. It is impossible to say in general what counts as conclusive evidence, for it depends on the subject matter and circumstances, and it depends on these in different ways. But I do not regard each sunrise as confirming anything nor do I check my color vision on the hour, yet it is not just very probable that the sun will rise tomorrow or that this pencil is red.

It is quite true that grounds treated as conclusive are always short of a demonstration and even occasionally prove inadequate. This is not important. The important thing is that conclusive evidence *concludes:* no demand for more evidence in the face of conclusive evidence is intelligible.

Stating evidence must be distinguished from stating reasons, premises, assumptions, as demanding proof or evidence must be distinguished from simply inquiring about another's reasons. We may ask that someone give us some grounds to accept what he said or we may ask what led him to say what he said. The latter query need not witness a refusal to concede what was said. Similarly, we will not allow that someone has produced evidence unless he has cited facts, spoken the truth; but he may, in stating his reasons, premises, assumptions, state what is not fact but mere opinion or conjecture. The point is that to describe someone as having stated or produced evidence is to allow, among other things, that he has kept to the truth. Thus one cannot without absurdity demand evidence for evidence or speak of evidence as false.

Whenever anyone asserts anything, there is an ostensible basis for others to accept what he says. (There is at least his testimony.) A demand for evidence, a refusal to allow the matter on that basis, implies that one cannot concede, grant, allow this kind of thing on this kind of basis. Thus there is implicit in every such demand a restriction

on what may be produced as evidence: nothing will be treated as evidence which is not itself more firmly grounded than the original matter. Now if the ostensible basis for an assertion amounts to conclusive evidence, a demand for more evidence is self-nullifying. "If this will not be conceded, what can be?" Giving evidence is a matter of citing authorities, stating facts, and performing tests. But authorities, facts, and tests are necessarily accepted, well-known, and acknowledged. Such queries remove the background against which evidence is demanded and produced, for that background is founded on nothing better than conclusive evidence. "If he demands proof for this, whom must he count as an authority, what can he take as plain, which tests will he regard as effective?"

Of course, some apparently unintelligible demands may prove to be merely exotic. Explanation may show that the circumstances are in some way special or the ostensible basis not what it seemed. In philosophy, the existence of one's hands, desk, and ink bottle tend to become subjects of investigation. Such demands are utterly self-nullifying: the ostensible basis is so extensive that asking for evidence, for something one can allow, witnesses that nothing can be allowed. Such demands cannot be retrieved by an explanation. That the evidence available is not logically conclusive, or that others have been mistaken in the same situation, does not provide a warrant for such inquiries. (You can always say that.) As I cannot get evidence, I cannot even have reasons for saying that my hand or desk or ink bottle exists, for nothing could be better established. There is a temptation to say that I have the best of reasons—somehow my whole life, everything, stands behind these truths. The source of this temptation is the fact that if I am not to concede such things, I can concede nothing. This is why no one can sensibly wonder if he is dreaming or is hallucinated when all appears normal. That is to "question" the plainest things. What could he count as evidence that he was dreaming? Or that he was not?

"Know" is used to assure others in a special way. It indicates that the evidence is not merely good but is as good as can be, that further investigation has lost its point. "Know" closes questions, stops debates. Allowing that someone knows or knew something is incompatible with continued inquiry and caution. This is what constitutes the gravity of the claim: in authorizing others to consider matters closed, I assume a special responsibility for the consequences of error. It is in this way that the difference between "know" and "probable" is to be understood. When we say that S is P is probable, we are liable to support

our claim by showing, say, that in this kind of situation S has been P more often than not. If experience to date does reveal this, then whatever happens, it was probable that S was P. This is the point of saying that probability is relative to evidence. When we say we know, we are liable to show that experience to date makes unintelligible a demand for more evidence. Now further experience cannot change what experience showed at some previous time but it can reopen closed questions and renew old debates. It commonly happens that what at some previous time could not sensibly have been questioned comes, in the light of subsequent events, into question. At some times and places a demand for proof that the earth was round would not have been intelligible. If "know" merely signaled evidence of a certain weight, we could allow that people knew even if they have proved wrong. But "know" signals conclusive evidence which is not, as it were, a matter of the timeless weight of evidence. If further experience has reopened a question or disposed of it in a different way, we cannot allow that someone knew, though the evidence in hand at the time of the claim was as good as could be. Hence, in denying that someone knew, we are not necessarily denying the propriety of the claim. To say we know when we do not even think we know is improper; it is only a mistake to say we know when we merely think we know.

6. If one knows something, expressions of even the slightest doubt have no place, but this is not because a use of "know" indicates confidence similar but superior to that indicated by "opine," "think," "certain." It is rather that expressions of doubt are self-nullifying in the face of conclusive evidence. The point of saying that one is in doubt or has doubts about an empirical matter is to begin or maintain an inquiry or warn others not to bank on what he says. Nothing can be made of an expression of doubt about what is plainly so. How is such a doubt to be allayed or such a chance of error hedged? "It is just possible that the Roman Empire never existed." But it is just possible that the *Britannica* is a work of fiction and Old Rome no older than the last film epic. "Although the sky was clear a moment ago, it might have begun to rain again." But then, my umbrella might be a teapot.

Occasionally, one comes across an extraordinarily cautious person. As some men wear both braces and belt, some doubt what is beyond doubt and want proof for what is obvious. It is easy to imagine such a person adopting a more severe set of requirements than the received ones for, say, being sure about people. When he says, "But it's just possible that I am wrong about Y's honesty," it has a completely

personal flavor. Those who know him can gather from this that there is no doubt about Y's honesty at all. But his is a real doubt and his demands are (prove to be) intelligible. He carries on investigations and commits himself when, as occasionally happens, he has in his own way made sure about someone. But if his fears are real they are also foolish. Persons are not so full of duplicity as all that. If they were, the conventional requirements for conclusive evidence would be different from what they are. These doubts do, in a sense, go deeper than ordinary doubt, but it is important to distinguish them from philosophical doubt. The latter is not deeper doubt; it is not doubt at all. The amateur skeptic's demands are not self-nullifying. There remain things that he can allow and on which he can rely. He does not have the slightest doubt about his hands or his ink bottle. Only a madman can really doubt such things, for really doubting is a matter of seeking evidence and guarding against error. The lunatic, being a lunatic, can gather depositions about the existence of his left hand, meanwhile trusting his ring and spoon to the right. This is real but pathological doubt. How absurd to doubt the existence of one hand while allowing the existence of the other! The philosopher cannot doubt such things at all. He sees the folly of taking precautions or conducting inquiries into such matters because he understands that if such things are "doubtful," everything is. He "doubts" such things because they are not logically necessary in themselves or on the evidence, or because some people have sometimes been mistaken about such things.

It is now, I think, easy to see how the use of "know" differs from that of "opine," "think," "certain." No expression of doubt is possible when one knows, not because one has discovered in himself supreme confidence, but because one has conclusive evidence, and checking and hedging have lost their point. One cannot know directly that he knows. Commonly, people think they know when they do not. But the fact that others have been wrong on similar evidence is no bar to my now claiming that I know, that I could not be wrong. There is no choosing between "I think I know" and "I know that I know," for "I think I know" has no use. "But this is arbitrary. How can you admit that others have been mistaken in the same situation and yet insist that *this* time there is no possibility that you might be wrong?" It is just the reverse of arbitrary. My position is just what theirs was—they were in no position to express doubts and neither am I. We can always admit we were wrong and revise our views, but there is a logical bar to always anticipating such admissions and revisions.

I want to guard against a possible misunderstanding. Malcolm has

said Moore erred conceptually when standing before the British Academy he claimed to know that his hand existed.[8] The context left no room for doubt, for investigation, for proof, and consequently, for the claim to know. Surely this is right. We may not claim knowledge whenever doubts and demands for evidence have no place. There are circumstances where a claim to know is as unintelligible as an expression of doubt. "Know" looks to some actual or incipient doubt. A piece of the puzzle was missing and now it is found. When someone says he knows what seems plain to us we fairly presume there was some question of which we were unaware. The more obvious it is that something is so, the more at a loss we are to say how we know it is so. And this is another part of the difficulty of saying how good one's evidence must be if it is to warrant a claim to know. It must be enough to allay the doubt, decide the question; and doubts and questions have different sources and are more and less serious. Hence, while there are many things we may say we know, there are more things that we may say are just obvious, and still more things go entirely without saying.

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[8] Norman Malcolm, "Defending Common Sense," *The Philosophical Review*, LVIII (1949), 201-220; G. E. Moore, "Proof of An External World," *British Academy, Proceedings*, XXV (1939), 273-300.

HISTORY, THE INDIVIDUAL, AND INEVITABILITY

To contemplate the history of philosophy is, on the whole, a dispiriting experience; philosophy swings with such violence between extremes—extremes which, on examination, turn out to have a great deal in common—without ever coming to rest in an intermediate position, even when the truth of that position is, on the face of it, abundantly evidenced in everyday experience. In particular, it oscillates between atomism, understood as the view that the complex objects of everyday experience are "really" arrangements of ultimate units, and monism, understood as the view that they are "really" constituents in an all-embracing whole—although our experience, surely, is of objects which are both ingredients in wider complexes and "arrangements" of other complexes, without these wider unities and narrower constituents being either more real or less real than the objects themselves.

When, for example, Russell rightly criticized the monism of Green and Bradley, it was in order to revert to a "logical atomism" which, if they had done nothing else, Green and Bradley—to say nothing of Plato before them—had shown to be wholly untenable. The question between Russell and Bradley was whether the sensory atom or the absolute could properly be taken as ultimate: the alternative, *that there are no ultimates*, seems not seriously to have occurred to either philosopher. Perhaps they would have dismissed it as skeptical: yet, as Plato and Hume have made perfectly clear, nothing could be more skeptical than a seriously held monism unless it be a seriously held atomism.

Within the philosophy of history, the same oscillations between assumption-sharing extremes are only too apparent. Philosophers have asserted that the course of history follows an unalterable pattern fixed in advance of all human action, or else that human actions wholly determine what happens in history; that only groups are real, or that nothing can be real except individuals; that the entire course of history is predictable in detail, or that historical changes lie quite beyond our powers of prediction; that individuals are the passive victims of circumstances, or that they possess, uniquely in Nature, a power of pure agency. Yet our experience, on the face of it, favors neither alternative in these dilemmas. If human beings sometimes

achieve their objectives, they sometimes do not; when they are unsuccessful this is sometimes because they are defeated by the actions of other people, but sometimes because they meet with obstacles which are not, in any normal sense of the phrase, human actions; they are no less, and no more, real than the groups of which they are members; they are profoundly influenced by the circumstances in which they find themselves, yet react to these circumstances in individual ways; not every item in their history is predictable in principle, yet de Tocqueville was not merely guessing when he predicted the rise of the welfare state.

These reflections were most immediately provoked by Karl Popper's *The Poverty of Historicism* and Isaiah Berlin's *Historical Inevitability*,[1] two powerful polemics against monism. Berlin and Popper are both of them passionate liberals—in the English sense of that word—concerned above all else to defend individual liberty against totalitarian usurpations. *Historical Inevitability*, indeed, has the tone and manner of a lay sermon rather than of a philosophical analysis; as a sustained rhetorical composition, it can have few modern rivals. *The Poverty of Historicism* is more coolly composed, but it needs no deep scrutiny to discover the pressures lying behind it. Popper and Berlin rightly believe that monism has totalitarian implications; they wrongly conclude that liberalism must rest upon an individualistic metaphysics.

In fact, so I should be prepared to argue, Plato was right in thinking that an atomized society, in which the prevailing ideal is the advancement of personal interests (whether one's own interests or the interests of other people) rather than the development of traditions, readily falls a victim to tyranny. For all that the Englishman likes to picture himself as a sturdy individualist, the strong group loyalties so noticeable in English society have been his main bulwark against tyranny, both that tyranny of the majority which Mill and de Tocqueville so rightly feared, and the tyranny of an "organic state." This is the truth which lies behind monistic criticisms of individualistic conceptions of liberty.

Yet equally I should say—and this is the truth which lies behind individualism—that the plurality and diversity of the groups to which

[1] Karl Popper, *The Poverty of Historicism* (Boston, The Beacon Press, 1957), 166 pp., $4.00. Isaiah Berlin, *Historical Inevitability* (Auguste Comte Memorial Trust Lecture, No. 1; London and New York, Oxford University Press, 1954; third impression, 1957), 79 pp.

the Englishman belongs are essential to the preservation of his liberty, understanding by "plurality" and "diversity" not merely the fact that there are many such groups, but also the fact that the groups themselves (the Church of England is the supreme example of this principle) admit, to so marked a degree, of internal diversity. Those who describe society in terms of groups and "group-loyalty" so often do so in the service of a totalitarian conception of group-life—as if society were, or ought to be, a magnified sect—that writers like Berlin and Popper not unnaturally suspect their *bona fides*. The effect of this suspicion is that both Popper and Berlin fail to distinguish between a variety of possible alternatives to their own position; merely because their pluralistically-minded opponents use, at certain points, the same language as totalitarians—there is no other language to use—they are at once branded as "holists" or "historicists."[2]

The Poverty of Historicism originally appeared in *Economica* as a series of articles in 1944-1945, at a time, that is, when the pressure for "total planning" was at its most powerful. The first version of it was prepared in 1935; the necessity for opposing what Popper calls "the historicist superstitions of the Third Reich" lent a quite peculiar urgency to his criticisms. In an emergency, one is always inclined to think of one's enemies as a single enemy; that no doubt explains why Popper's "historicist" is so Protean a creature.

Popper begins his essay, indeed, with a quite restrictive definition: "I mean by 'historicism' an approach to the social sciences which assumes that *historical prediction* is their principal aim, and which assumes that this aim is attainable by discovering the 'rhythms' or the 'patterns,' the 'laws' or the 'trends' that underlie the evolution of history" (p. 3). Yet it soon becomes clear that he is attacking as "historicists" a much larger, and strikingly heterogeneous, class of social philosophers: anyone who denies that the methods of the natural sciences are applicable to society, or who supposes that there can be a total plan for society, or who imagines that the starting point for social inquiry is the group—in short, anyone who opposes Popper's own view that the proper method of social reform is by piecemeal social experiment, and that individual actions are the ultimate subject matter of social inquiry—is liable to find himself described as a "historicist." Then, just because *The Poverty of Historicism*, considered

[2] I know that pluralism and atomism are often identified. I mean by pluralism—following Professor John Anderson of the University of Sydney—a theory which rejects both atoms and total wholes.

as a series of criticisms of specific views, is so brilliantly convincing a work, just because it so often precisely pin-points a confusion and wholly demolishes it, his readers may well be led to imagine that Popper has proved more than he has: that no view alternative to his own—since all such views are "historicist"—could possibly survive his criticisms.[3]

Consider the case of Toynbee. Any reader of Toynbee—an historicist if ever there was one—must be struck by the way he illicitly identifies two quite distinct theses: the first, that certain types of situation regularly recur in history and regularly develop in a particular way; the second, that there is a "total scheme" in history, a single plan, into which all such recurrences fit. Similarly, evolutionary theory—which, as Popper rightly points out, has had an influence in social theory almost as disastrous as it has been extensive—might be maintained in either of two forms: as the historical hypothesis that there was once a specific "beginning to life," at which time there emerged a certain form of living organism from which all other living organisms have gradually evolved, or alternatively as the general biological hypothesis that under circumstances of the type *X* organisms develop in the manner *Y*. The truth of this latter hypothesis would be quite unaffected if the discovery were to be made that at different times and places different forms of living organisms had independently arisen, provided only that such organisms developed to their present form in the manner the hypothesis lays down—for example, by natural selection. Similarly, one can quite well hold that there are recurrent patterns of development in human society without admitting that there is anything describable as "the tendency of human history."

Popper has little to say against theories of this restricted kind; his main fire is directed against "philosophies of history." But he does, all the same, reject them, writing thus: "it is clear all these instances of repetition involve circumstances which are vastly dissimilar, and which may exert an important influence upon further developments. We have therefore no valid reason to expect of any apparent repetition

[3] I should, I think, point out that this discussion is not, in any formal sense, a review. I take it that no one now needs to be told that *The Poverty of Historicism* is an essay so fecund in ideas, so rich in suggestion, that a review which tried to give any account of its content would need to be as long as the essay itself. Its defense of naturalistic methods in the social sciences, and its critiques of monistic tendencies in the philosophy of history, are equally remarkable; what I am criticizing is only a small segment of Popper's essay.

of a historical development that it will *continue* to run parallel to its prototype" (pp. 110 f.).

Now, if this argument were valid, a quite parallel reply could be constructed to deny the possibility of a theory of maturation. One might say, "All sorts of circumstances affect the maturing of an organism; sometimes it dies, by accident or disease, almost as soon as it comes into existence; new medical discoveries might revolutionize the processes of maturation; the mere discovery that such-and-such processes take place in the course of maturation might, indeed, enable us to alter that course; there is, then, no valid reason for supposing that what happens in one organism will be at all parallel to what happens in another." Yet in fact these objections do not in the least tell against the possibility of studying processes of maturation or of making predictions based on that study. We are doubtless never in a position to say categorically of any person *X* that he will in fact come to maturity; but we can assert with confidence of any aged man that he must once have been a baby, and of some aged men that they must have had a sturdy middle age. Similarly, if we encounter a human society only at a very advanced stage in its history—perhaps as a heap of ruins—we can be confident that it did not begin at that point, and by noticing the characteristics of the civilization it displays we can hope to give a reasonably accurate account, in general terms, of its earlier history—determining whether, for example, its wealth derived from trade or conquest. Of course, those who believe they can detect regular patterns in history have often claimed a great deal more than this, and, as in Toynbee's case, they have often argued for their conclusions in a very unscientific way. The fact remains that Popper's arguments against historicism do nothing to demonstrate the impossibility of there being true general statements about the development of human societies, although certainly there can be no such statement about "the movement of human history."

This leads to a second question: are all generalizations about societies reducible to assertions about the behavior of individual human beings? On this Popper has two things to say. As against the view that all statements about social facts are reducible to statements about individual minds, he argues that the social sciences are concerned with the *unintended* rather than the intended consequences of human action. So far he takes his stand with sociologists as against psychologists. His brief account of what he calls "the logic of situations" (p. 149) suggests that he has a real feeling for the inadequacy of individualistic accounts of human history. Yet he nonetheless asserts that

groups, societies, institutions are "abstract concepts." In reality, he argues, there are only "concrete" human beings, interacting with one another and with their surroundings in a variety of ways. "Even 'the war' or 'the army,'" he writes, "are abstract concepts, strange as this may seem to some. What is concrete is the many who are killed; or the men and women in uniform, etc." (p. 135); and again, "in speaking of governments, nations, armies he [the historian] uses, usually unconsciously, the 'models' provided by scientific or pre-scientific sociological analysis" (p. 145).

I find it difficult to distinguish precisely between "abstract concepts" and "concrete facts"; one can very easily slide toward the British empiricist conclusion that everything we ordinarily take to be a concrete thing is in fact an abstract concept, that "a table," let us say, is a "pre-scientific model" constructed in order to account for our sensory experiences, or else, what is the obverse of this, toward the idealist conclusion that only what we ordinarily call "abstract concepts" are fully concrete. But certainly I cannot conceive of any satisfactory way of distinguishing between abstract concepts and concrete facts which would include "men in uniform" among the concrete things and "armies" among the abstract concepts.

To simplify matters, let us consider a particular segment of an army, say the New South Wales Corps. Then obviously this has a history in exactly the same sense as an individual has a history; we can date its origin and its dissolution, can locate it in particular areas at particular times, could look at it, hear it, be attacked by it. Certainly it existed only where there were human beings to sustain it; members of the Corps could leave it and live in other surroundings; when inspecting it, a colonel looked at particular men; and when the Corps attacked, an individual man, not the Corps, fired the shot that killed. But equally a man exists only where there are cells; cells can be transplanted from his to some other organism; what at any given time is visible to a particular observer is only a part of the man; his finger, not the whole man, pulls the trigger. Yet it by no means follows that only cells are real, and men unreal.

Let us look at the matter in another light: suppose that by an "abstract concept" we mean some sort of "theoretical entity." Then, I suppose, the characteristic feature of such entities is that they are referred to only in explanations, not in historical or descriptive assertions. (If God were simply "the first Cause," he would be a "theoretical entity.") Then the mere fact that "the N.S.W. Corps in 1787 consisted of two hundred men" is sufficient to show that it is not a theoretical entity.

One can understand, as I have previously suggested, why Popper wishes to maintain that groups are "abstract concepts." For the social monist the individual is a "mere abstraction"; Popper is desperately anxious to avoid that view and swings to the opposite extreme—the atomistic doctrine that groups are abstractions and only individuals concrete. But why take either view? It is quite as arbitrary to assert that, in such an everyday historical sentence as "the trial of the ministers of Charles X stirred up disturbances which the troops had difficulty in controlling," such expressions as "the trial," "the troops," "disturbances" refer to "abstract concepts," whereas "Charles X" refers to a concrete entity, as it would be to take the opposite view—that "Charles X" is an abstract expression and should be replaced for concreteness' sake by "the remnants of the feudal classes."

This sort of objection to Popper is not to be found in Berlin's *Historical Inevitability*; on the contrary, although he expresses his admiration for Popper's attack on historicism, Berlin believes (p. 10 n.) that Popper makes far too many concessions to naturalistically-minded social sciences. One must admit that on first reading *The Poverty of Historicism*, one is surprised to find that Popper combines an attack upon the conception of history as an "inevitable unfolding" with a spirited defense of natural-science methods in social inquiry: surprised because the opponents of inevitability are generally opponents, too, of naturalistic social inquiry. But Popper is quite right in insisting—and this is one of the most valuable features of his work—that "inevitable unfolding" and "irresistible tendencies" are phrases which belong to metaphysics, not to natural science. For natural scientists there are always conditions under which an unfolding will not take place, and a "tendency" is always in principle resistible.

In his *Historical Inevitability*, nevertheless, Berlin attempts to reinstate the classical anti-determinist position, with its opposition both to the idea of inevitability and to the idea of a naturalistic social science. Thus he opens his essay with an attack on the view that "human history could be turned into a kind of natural science"—an attack based not, as it quite well might be, on the contention that history has not the structure appropriate to a science[4]—but on the much more far-reaching objection that naturalistic histories are "a distortion of the facts, a denial of the evidence of direct experience, a deliberate

[4] I have discussed this question more fully in a number of articles: in "The Objectivity of History" (*Philosophy*, XXXIII, [1958], 97-111) and in "History and Social Science" and "Explanation and Law in History" in forthcoming numbers of the *Australian Journal of History and Political Science*.

suppression of much of what we know about ourselves, our motives, purposes, choices, perpetrated in order to obtain by hook or by crook a single, unitary method in all knowledge" (p. 5). He wishes to deny, that is, not only that history is a science, but also—what is a very different matter—that historical events can be studied in a scientific spirit.

In part, Berlin's objections to naturalistic social science rest on a complete misunderstanding of the achievements of natural science. "Newton was able," he writes, "in principle to explain every movement of every particular constituent of physical nature in terms of a small number of laws of great generality." Equally, he therefore supposes, a naturalistic sociology or a naturalistic psychology would hope to arrive at laws of such a kind that it could "at least in theory, predict (or reconstruct) every detail in the lives of every single human being in the future, present, and past" (p. 18).

Berlin should have read his Popper more carefully. "There is no single law, such as that of gravity," Popper rightly points out, "nor even a single definite set of laws, to describe the actual or concrete succession of causally connected events" (p. 117). Suppose I roll a marble across a road in the center of Sydney: no set of physical laws could enable me accurately to predict its actual course; a policeman might tread on it, a messenger boy pick it up, a sudden gust of wind blow it sideways. Equally, a psychologist or sociologist could have no ground for anticipating that, as I sat trying to write this article, my pen ran out of ink, a sudden rainstorm made it necessary for me to close the windows, I felt a cold in the head coming on. Yet each of these happenings affected my psychological state.

Berlin, in fact, makes our blood run cold by associating naturalism with a particularly primitive species of Laplacean determinism, in order to entice us into an anti-naturalistic doctrine of "free acts," acts "not wholly determined by antecedent events or by the nature and 'dispositional characteristics' of either persons or things" (p. 33). Now no doubt there have been plenty of Laplaceans in the social sciences, and many of them have thought that in order to be consistently naturalistic they had to be Laplacean; but at this stage in the history of thought one can surely expect a philosopher not to proceed as if Laplacean determinism and free will are the alternatives between which we have to choose, and not to presume that a naturalistic social science must be Laplacean.

Laplacean determinism assumes that in making predictions the scientist is confronted by a closed system containing a finite number of

elements—something like a planetary system if, as we usually do in practice, we ignore the possibility that internal changes within the planets or intrusions from outside the system might alter the relationship of the planets to one another. But, on the face of it, our actual experience is very different: we are dealing all the time with systems which are neither closed against intrusion nor analyzable into a finite number of elements. If we refuse to admit, as to my mind we clearly should, either that there is a single total system or that complex systems are reducible to ultimate atoms (in the metaphysical sense of atoms), Laplacean determinism is at once ruled out; for the ideal of a "total knowledge" turns out to have no content. Yet it does not follow that in thus rejecting Laplacean determinism we are in the slightest degree committed to asserting the existence of "free acts" in Berlin's sense of that phrase. We can still be determinists, but our determinism will be "retrospective."

We shall say, not that it is always possible in principle to predict the future states of a system, but only that when a change takes place in such a system it is always possible in principle to discover the conditions which gave rise to it. There is in such a reconstruction no gap which has to be filled by supposing the existence of acts which are free in a metaphysical sense, although, of course, there are free acts in a more everyday sense of that phrase—acts of such a kind that we cannot properly claim that we were *compelled* to act as we did.

To take this view, Berlin might still protest, is to make nonsense of our ordinary habits of ascribing praise and blame, and of allocating responsibility; that is the main objection he brings forward to determinism. This is a question I find it hard to discuss. It seems to me perfectly clear that I praise or blame in cases where I quite obviously do not ascribe free will to the agent : I praise a dog for bringing me its bone, or a child for doing as it is told. My praise for an undergraduate's essay is not diminished because he has, as we say, "a good brain"; nor do I blame another the less for his carelessness because I think it typical of his character.

But, Berlin tells me, whatever my actual practice, it is logically absurd for me to praise or blame unless I hold that people are "ultimately responsible" for their acts. Once again, the metaphysical conception of "ultimates" is allowed to bedevil the issue; I am supposed to say, apparently, either that the person himself is "ultimately responsible," or else that society bears the ultimate responsibility. No doubt, one must confess, the alternatives have often enough been presented in this way: monists and atomists agreeing that there is

"ultimate responsibility," but sociological monists ascribing it to society, or to nature, or to "the system," whereas sociological atomists ascribe it to individual, self-contained agents. But surely the time has come to reject entirely the conception of "ultimate responsibility," in the metaphysical sense of that phrase, along with the rest of the paraphernalia of "ultimates."

Of course, one can say things like this: "in Great Britain, the Cabinet Minister is ultimately responsible for his Department." One knows what this means: if a serious mistake is made, out goes the Cabinet Minister. In such a case, however, we are often quite well aware that the Minister has been completely misled by his Department; this is not the sort of "ultimate responsibility" the metaphysical moralist wants somewhere to locate. A guard lets a train go past a stop signal; we hold him responsible because it is his job to watch the signal. But perhaps his wife had been nagging him, perhaps he was worried about finances? Shouldn't we ascribe "ultimate responsibility" to his wife—or to her mother, who had brought her up badly, or to her grandmother, who had brought up her mother badly—or to the moneylender, or to the railway company for not paying him more money? That leads to an impossible situation, an infinite regress of a vicious kind. We can ascribe responsibility only if we think of people as having jobs to do, tasks to fulfill, actions to avoid: to refuse to ascribe it to anybody whose failure to do his job is affected by his character and his circumstances would be to make the whole conception of responsibility entirely useless.

Undoubtedly there is a great deal more to be said about praise, blame, and responsibility. One can agree with Berlin, for example, in rejecting the doctrine that with greater understanding one inevitably ceases to blame, and yet still feel that praise and blame are the automatic responses of the uneducated and the insensitive, rather than of the educated and the sensitive; that they come more easily to the lips of the readers of popular newspapers than they do to those who happen to stand personally close to the tragedies about which those newspapers like to moralize, more easily to the dogmatic moralist than to the serious student of human nature and human affairs, whether he be secular or religious in his outlook. These are matters which deserve more attention than they ordinarily get, and Berlin is right to insist upon their importance. But in his consideration of them, he moves within altogether too narrow a framework of metaphysical possibilities.

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LIBERALISM IN GREEK POLITICS

PROFESSOR Eric A. Havelock has made a valiant effort to expound a neglected phase of early Greek political theory,[1] one in which it is held that "the human species emerged from non-human forms of life, by some evolutionary process, so that man's present body and brains represent the end-product of a long series of mutations; and, second, that his moral and social codes have developed since he became intelligent, as a continuation of the evolutionary process" (p. 30). It explains the evolution of society and government as a continuous process not bounded in time or space. It did not, like Aristotle, consider the city-state the end of the process but, in opposition to the normal Greek exclusiveness, considered all men of all nations as equal by nature. The science which evolved this theory is "historical and anthropological" (p. 30). The theorists are pre-Socratics and sophists. They are called " 'liberal' in contradistinction to the formal, the teleological, and the authoritarian theories of Plato and Aristotle" (p. 123), and for convenience they will be so called throughout this discussion. Their theories were swamped by the influence of Aristotle, who "has exercised over the Western mind a moral authority not unlike that which has been wielded by the Old Testament" (p. 376). Thus the task has become largely one of deducing liberal theory from what is implied by statements of Plato and Aristotle.

This emphasis on the analysis of Plato and Aristotle is unfortunate, for it relies on little but hunches and intuition for determining what is or is not liberal theory. And yet the adoption of this approach can readily be understood. There are no works of the liberal theorists preserved in their entirety. Of fragments there are a few of anthropological theory but extensive fragments of social and political theory only for Democritus and Antiphon. Hence it is necessary to rely on the testimony of others. Here Plato has much to give, and Aristotle, too, frequently mentions theories of others but without giving the names of their authors. Though this information is extensive, Havelock is not satisfied merely to use direct evidence but sometimes considers this distorted and further wishes to deduce additional information from passages in which the informants in no way indicate that they are

[1] Eric A. Havelock, *The Liberal Temper in Greek Politics* (New Haven, Yale University Press, 1957), 443 pp., $6.00.

quoting others. Thus he, apparently consciously, adopts an extremely subjective approach which at best can yield only tentative results. This calls for boldness, and on that score Havelock leaves nothing to be desired. It also calls for scrupulous accuracy and frankness in the handling of evidence. On this score the chief cause for complaint is that an extensive use of modern jargon in the rendering of sources often changes their flavor, and that translations of poetry sometimes are padded. Thus two lines of Aeschylus' *Prometheus Bound* (613-614), which Lewis Campbell rendered:

> O bold Prometheus, universal boon
> To mortals, what offence atonest thou here?

on page 62 become:

> Thou great utility of social man
> His brightest light since history began
> Prometheus, steadfast in your work revealed,
> What spells this punishment, these fetters sealed?

And this, which is Havelock's own translation (cf. p. 407), seems to contain, besides the excessive wordiness, an outright mistake in the phrase "social man"; the adjective *koinon* does not modify "man" but "utility" ("boon") and here does not mean "social" but "common to" or "shared by." Thus Campbell is more nearly correct. Havelock's slip is surprising, for he is a competent scholar.

The plan of the book may be outlined very briefly. After an introductory chapter, four chapters are devoted to anthropological theories concerning the origin and evolution of man. Then comes Chapter VI on "The Political Theory of Democritus." Chapters VII-XII—except for Chapter X, "Antiphon"—are devoted primarily to efforts to deduce information from Plato and Aristotle. After this comes the concluding chapter, "Greek Liberalism—The Full Flavor." The appendices (pp. 405-420) contain discussions of a few difficult points and some bibliographical information. The index (pp. 423-443) is of the kind that gives only one or more page numbers after an entry and so is of little value except for subjects seldom mentioned.

The section on anthropology, though starting with indirect evidence before turning to the preserved fragments, could have been very simple. At a time when efforts were being made to explain the universe mechanically, some theory of the evolution of man was inevitable, and the few fragments discussed in Chapter V are enough to demonstrate its existence. Other evidence adduced proves that the theory influenced the works of fifth-century dramatists. It would seem that this might

well have been enough as a background for a study of social and political theories. Of course, it is possible to criticize details, but on the whole all would have been well but for the effort to deduce too much from Plato and Aristotle. One point concerns their claim that, of the animals, only men possessed reason. Anaxagoras too held that "the human being is the most intelligent of the animals" (item 17, p. 108), but somehow this is not considered the same, and "the intelligence characteristic of man pervades all the organic world" (p. 110). On the other hand, when Plato refers to animals as *aloga*, "witless creatures" (p. 89), this is taken to mean that "man ceases to be an animal" (p. 91). Aristotle, too, in spite of calling man an animal, really sets him aside. "Man alone has *logos*. . . . He is not an animal at all, except in Aristotelian double-talk" (p. 103). This conclusion is based largely on the use of *aloga* and *logos*. There is reason to believe, however, that this usage was not peculiar to Plato and Aristotle, but that the liberals—at least Democritus—used *aloga* much as Plato did. Careful reading will show that where *aloga* occurs in the Prometheus myth in Plato's *Protagoras* (321c) man too is still "witless." Hence the use of the word here for other animals, excluding man, suggests that when Plato wrote it was a commonly used and readily understood designation. This is borne out by its use by Democritus in fragment 164 quoted in part as item 28 on page 115. The statement about pigeons and cranes herding with their own species is followed in the original by words to the effect that the same is true of the other animals *(aloga)*. It is possible that the fragment as preserved is made up of two citations (p. 412), but if so, these words belong with the first, the one otherwise quoted by Havelock. Thus this effort to distinguish between the theory of the liberals and that of Plato and Aristotle in their treatment of the relation of men to animals is a failure. Equally futile is the effort to claim for the liberals an important point in the second book of the *Republic*. When the development of the *polis* as a result of the need for specialization is traced, Havelock finds that Plato has used "the resources of the anthropological method" (p. 94). After a discussion of some details he concludes, "Finally and most radically the suggestion is ventured that morality itself is in fact definable in terms of the system which regulates men's relationships in such a society (item 21). The naturalist-historical approach to ethics can in principle hardly go further than this." Unfortunately, the next paragraph begins, "Plato at once drops this last suggestion, and in this form it is never resumed" (p. 97). But is not this one of the central thoughts of the *Republic?* Moreover, does not the later statement

about the principle laid down "when we were founding our city . . . that each one man must perform one social service in the state for which his nature was best adapted" (433a, Shorey's translation) refer back to our passage as clearly as can be done without numbered pages or sections? Thus one important contribution claimed for the liberals without any direct evidence must be restored to Plato.

The crucial Chapter VI, "The Political Theory of Democritus"—and much more, too—is vitiated by the assumption without adequate proof that Democritus and other liberals were democrats. "For the liberals man is to be taken as you find him and therefore his present political institutions are to be taken as given also. For practical purposes, in 440 B.C., this meant the Athenian democracy" (p. 123). Such an assumption overlooks the fact that there was a great diversity in forms of government at the time and numerous advocates of oligarchy even in Athens. If it is true that Democritus recognized the aristocratic principle that government should be entrusted to the superior (p. 148), and if he defended the election of magistrates by vote (p. 150), he was not a champion of Athenian democracy. The Athenian democrats favored the selection of magistrates by lot. This mistake, however, need not affect the more important part of the interpretation of Democritus. "He is looking at the behaviour of man in a cosmic and historical setting. . . . The power to execute is primary, if societies are to exist at all. He finds the prototype of this power in the right to kill animals" (p. 129). The first impression on reading the chapter is that Havelock has proved his point, but a closer examination raises doubts. Thus in the fragments taken to refer to primitive times (items 1-6 on pp. 127 f.) the verbs are all in the present tense, in this way suggesting that the statements refer not to past but to contemporary conditions. A further analysis will prove that this is the case. In item 1, where there is a reference to the killing of animals, the expression "exempt from penalties" indicates a society in which there are penalties for killing animals belonging to others but in which under certain circumstances the killing is justified and the killer not liable to penalties. Item 3, referring to "injury contrary to right," concerns a society with laws and standards. Item 6 urges that one should "avenge" wrongs done to a third party and not overlook them. This sounds primitive, but already, a century and a half earlier, Solon had enacted a law permitting anyone who wished to bring suit on behalf of someone wronged. In reporting the law, Aristotle (*Const. Aths.* 9. 1) used the same verb, "avenge." In all likelihood Democritus too refers to proper legal action and not to self-help. Lack of space will not permit similar analyses of

other fragments to show that Democritus was a keen observer of contemporary conditions, realized that government and society were not without faults, and sought remedies for the faults. He wished the superior men whom he wanted in office to govern well but realized that there were difficulties. It was not to their advantage to neglect their own affairs in order to serve the state (item 24). Moreover, even honest administrators are likely to be criticized and attacked. Hence there ought to be better laws to protect those in authority (items 25-29).

After Democritus, Havelock deals with Protagoras and other sophists of the late fifth century. To their theories—and a hardly necessary defense of the sophists—the next three chapters (pp. 155-254) are devoted. The information is derived largely from Plato's dialogues and primarily the *Protagoras*. From the statements attributed to him by Plato it is shown that Protagoras supported at least one aspect of the democratic practice of the time, that of permitting, at least in theory, every citizen to speak in the assembly. This was defended on the grounds that all men possess civic excellence (322d-323c on p. 169). This appears to be genuine democratic theory, and there seems to be no reason to refuse to believe that it was defended by Protagoras. Here it would have been well to have noticed that the theory as stated differed from the common defense of the primary assembly on the grounds that in the collective judgment of the masses the various individuals, as it were, supplemented each other's knowledge—a theory which seems to have been much older but was still defended in the days of Aristotle (*Politics* 1281a 42). In the case of Protagoras was the emphasis on the right to speak connected with the interest of the sophists in training men for public life? The sophists may also have debated about methods of discussion but there is little to prove that they did anything in particular for "rationalizing the rules of parliamentary procedure" (p. 218); the use of assemblies was already well established. There still was occasion for continuing the old debate concerning who should have the right to speak and vote in the assembly, and in this debate Protagoras seems to have taken part on the democratic side.

There is also evidence for some internationalism or at least some protest against the narrow laws of citizenship of many Greek states including Athens. Apart from the interesting material from Antiphon, there is something to be deduced from the short speech of Hippias in Plato's *Protagoras* (summarized pp. 223 f.), but here Havelock decidedly tries to deduce too much. The opening remarks to the effect that those addressed are kinsmen and fellow-citizens by nature though not by law

may reflect a doctrine that men of all nations are equals, but there is no reason for holding that the audience is envisaged as "an assembly of pan-Hellenic proportions" (pp. 224 f.). It is merely a gathering in an Athenian house at which some of those present are non-Athenians. Nor is there any reason for seeing in the mention of arbitration any reference to international arbitration rather than to the kind of arbitration used extensively in private disputes, the kind Antiphon has in mind in the passage quoted on page 264. Finally, though it is true that Hippias uses a "parliamentary symbol" when he refers to "Athens as to the 'Prytaneum' of Greece" (p. 226), this commonplace comparison of an intellectual to a political capital hardly suggests that he is looking to "the Athenian parliament . . . as a model or standard for the way in which a pan-Hellenic assembly should be organized" (p. 227). It would have been most surprising had he done so. There were so many more appropriate models available in such organizations as the Amphictionic League, the Peloponnesian League, and the like, not to mention real federal states such as the Boeotian Confederacy.

Enough has been said to indicate that subjective reconstruction enters very largely into Havelock's interpretation, and that his conclusions frequently can be questioned. Hence it should be unnecessary to go into any detailed discussion of the treatment of Aristotle in Chapters xi and xii. One strange result may be noted. Keen observations on society by the man known for his detailed work both in biology and political science are claimed as borrowings from the liberals. Of course, Aristotle's chief offense is his teleology, but teleology does not disqualify a man as an observer and may actually to some extent be the result of observation. The late Sir D'Arcy Thompson was inclined to attribute Aristotle's point of view in part to the fact that "he was a better biologist than a physicist" (*Legacy of Greece*, p. 157). It may also be noted that, on the basis of information given by Aristotle concerning the theories of others, Havelock is probably right when he claims for the liberals the theory of the identity of "business activity" and "economy" (p. 344), but he seems to have been too absorbed in criticizing Aristotle to make the most of the evidence.

The upshot is that there clearly were earlier and contemporary theorists whose theories did not always agree with those of Plato and Aristotle. For them Havelock has adduced evidence which has added to our knowledge, but he has also claimed far too much for these "liberals." From the preserved fragments and from other evidence it is clear that some of them were more egalitarian than Aristotle and

probably had a more international outlook. The theories of Democritus, however, seem to have been aristocratic-oligarchic, while Protagoras probably was a democrat, but there is no reason to believe that the sophists contributed much to democratic theory. It is also clear that there were economic theories differing from those of Aristotle. On the other hand, the attempt to prove that the theory of the liberals on the relation of men to other animals differed radically from that of Plato and Aristotle has failed. Likewise, the effort to prove from his fragments that Democritus traced the evolution of society from primitive to contemporary times has not been very successful. This naturally makes the reader even more dubious about deductions from the indirect evidence of Plato and Aristotle. The examples noted indicate that the result is little correct knowledge about the theories of the liberals and much distortion of the work of Plato and Aristotle. Such is the material which constitutes the basis for the glowing picture in the concluding chapter. With this goes also an overly roseate view of political conditions in the fourth century (p. 381).

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BOOK REVIEWS

INTENTION. By G. E. M. Anscombe. Oxford, Basil Blackwell; Ithaca, Cornell University Press, 1957. Pp. xi, 93. 10/6; $1.50.

One way to see the importance of *intention*, or of intentional act, is to consider Wittgenstein's question: "What is left over if I subtract the fact that my arm goes up from the fact that I raise my arm?" (*Philosophical Investigations*, p. 161). Broadly speaking, we may say there are three possible answers: (i) that there is no difference between my raising my arm and my arm's merely going up; (ii) that what distinguished my raising my arm from my arm's merely going up is the fact that when I raise my arm a certain kind of psychological or physiological state plays an essential role in causing my arm to go up; or (iii) that, when I raise my arm, my arm's going up is determined not merely by a certain set of states or events but by a self who is a kind of "prime mover," capable of initiating physical causal chains in a way in which no mere set of states or events can initiate any causal chain.

Of these three possible answers, I would say that (i) is not worth serious consideration; if there is anything fit to be a datum for philosophy, it is the fact that there is a difference between my raising my arm and my arm's merely going up. According to some writers, the difference is only that the sentence "I raised my arm," unlike "My arm went up," is used to ascribe responsibility. But if there is ever *reason* for ascribing responsibility (and I cannot believe that the philosopher is in a position to deny that there is), then, I should think, this reason must pertain to someone's act and thus presuppose that there is a difference between my raising my arm and my arm's merely going up.

Alternative (iii) thinks of the self as a bearer of "active" or "creative" powers, as an agent whose activities are to be contrasted with the events of physics. In physics, when we explain a particular event causally, we trace it back to something which is itself a particular event (or set of events) and which is in turn capable of being traced back to still another event. But according to alternative (iii), when we attribute a particular event to a self or agent, we are not thus merely tracing it back to antecedent events. This alternative is philosophically puzzling for it presents us with a host of difficult questions about the nature of the self and about the way in which its "activities"

are related to the events of physics. Unless we are prepared to deal with these traditional questions (and it may be that we cannot avoid them), we should seek to remove the difficulties that are involved in (ii)—the view that what distinguished my raising my arm from my arm's merely going up is some psychological or physiological state. If there is such a state, it is one involving the concept of *intention.*

This is the concept with which Miss Anscombe is concerned, though she does not introduce it in the way I have just done. According to her, intentional actions are those "to which a certain sense of the question 'Why?' is given application." One may appeal to intention to throw light on this use of "Why?" or one may appeal to this use of "Why?" to throw light on intention. Miss Anscombe seems to take the second of these courses but I do not feel certain that she succeeds. For I believe that the linguistic uses by reference to which she would like to describe intentional action are uses which, in the end, can be identified only by reference to *intention, purpose,* or *action.*

Miss Anscombe has many useful things to say about the relations between intention on the one hand, and purpose and desire on the other. But her discussion is somewhat roundabout. She replaces many of the technical terms traditionally used to describe this subject matter with terms which she uses to describe the language in which we ordinarily describe this subject matter. For instance, where many of us would say "S finds *x* to be desirable," she seems to prefer "S applies desirability characterizations to *x*." Where philosophers speak of ultimate ends—those things we "welcome for their own sakes and independently of their consequences" (Plato, *Republic,* 357)—Miss Anscombe prefers to speak of those "desirability characterizations" which give "a final answer to the series of 'what for?' questions."

Miss Anscombe believes—correctly, it seems to me—that *will* and *desire* do not provide us with the marks of intentional action. Most of our acts, she points out, are not accompanied by any desire to accomplish the purposes they involve, nor are they preceded by any "act of will" which sets them off. The "primitive sign of wanting," she says, "is *trying to get.*" If I reach for a book, then, even though there is no felt desire for the book, I may be said to *want* it; but to say that I want it is simply to say that I am trying to get it. The word "try," however, has some of the limitations of "desire" and "act of will." If the book is near my hand, I don't try to get it, in the ordinary sense of the word "try." I *try* to get it—I make an effort—when the book is on the top shelf, almost out of reach; but when it is near I don't need to try. I wonder whether the concept of "trying to get something," as Miss

Anscombe understands it, can be distinguished from the original concept of intentional action. I try to bring about something E, in her sense of "try," if and only if I act in order to bring about E. If this is true, then, instead of saying that the primitive sign of wanting is "trying to get," it might be better to say that the primitive sign of wanting is "moving in order to get."

"The intention *with which* one acts," Wittgenstein had pointed out (*op. cit.*, p. 217), "does not 'accompany' the action any more than the thought 'accompanies' speech." When I raise my arm, there need be no discoverable process which is my willing, deciding, or choosing to raise my arm. Perhaps there is some neurological state that is peculiar to those occasions when I raise my arm. But no one knows what this neurological state is; yet I can usually tell the difference between my raising my arm and my arm's merely going up. Are we justified in speaking of *intention* here? Isn't the fact of the matter simply that I raise my arm?

One way of defending the concept of *intention* in this use is to turn Wittgenstein's question around, and ask: What is left over if we subtract the fact that B does *not* occur from the fact that A *fails* to do B—from the fact that A does not succeed in doing B? Suppose that an accomplished musician, playing a familiar piece with no discernible effort, strikes a false note; the case is not one in which he forgets how the piece is supposed to go. Even though his experience involves no conscious willing, trying, or intending, it would seem that we can truly say, of the note that he failed to strike, that it is the one he "wanted" to strike—the one that he tried or intended to strike.

If intending-to-do-something need not be a conscious experience and if it is not an esoteric physiological state, then it must be a kind of disposition. And if we are to escape the metaphysics of the traditional "creative" view of the self, that is, of alternative (iii) above, then, I should think, we ought to be able to describe the disposition without reference to "activities," without using sentences in which an event is ascribed to some self or agent. This might be a beginning: "A intends to do something B now" means that A is in a state such that, if only an obstacle to the occurrence of B were now introduced, A would make-an-effort-to-do-B. This definition, as it stands, would hardly persuade the proponent of (iii), for the last clause looks as though it presupposes the concept of self as agent. But if we could overcome this difficulty, then we could add: to say that A now does B, at least where the B that he accomplishes is some state of his body, is to say that B occurs because of the fact that A intends B now to occur; to say that A

now *can* do B, is to say that, if only A intended B now to occur, B would occur. (The problem of free will would thus turn in part upon the question whether we can also say that A can, or could, *intend* B to occur.)

Miss Anscombe says that "what physically takes place, i.e., what a man actually does," is the first thing we should consider in studying his intentions. But she concedes that the mark of intention, or of action, cannot be found merely by investigating the motions of muscles and molecules. It would be useful, I think, to decide on what is to count as "merely physiological," or (if this is clearer) to agree on what sentences are to count as descriptive of what is merely physiological. I suggest the following criterion. The sentences in which we describe the overt actions or doings of a person A are like psychological sentences (for example, "A believes that Socrates is mortal" and "A is ambitious"), and unlike physiological sentences ("A weights one hundred and forty pounds" and "A is tubercular"), in that they cannot be re-expressed merely by substituting for the word designating the person A any words designating a part, or a collection of parts, of A's body.

There is an important sense in which everyone may be said to have a privileged access to certain facts about his own intentions (though, if Freud is right, there are many such facts to which we do not have access). Miss Anscombe does not use the expression "privileged access," but if I interpret her correctly, she makes essentially the same point by means of the expression "knowledge without observation."

I think that Miss Anscombe does well to emphasize "non-observational knowledge"—what philosophers formerly called "direct" or "immediate" evidence. Using the older terminology, we could say that my knowledge about certain of my own states—for example, my knowledge that I *believe* that I am in my room, my knowledge that I feel well, or at least that I *seem* to feel well, and my knowledge of some of the things I now *intend* to do—is "immediate" or "direct"; and that the knowledge I "derive from the senses"—for example, what I *see* and *hear*—is "mediate" or "indirect." This use of "direct," "indirect," "mediate," and "immediate" is undoubtedly a *mis*use. Ordinarily, if I *see* that my neighbor is on the street, I am not likely to express myself by saying that I have only "indirect" or "mediate" evidence that he is there. (If I learn by hearsay that *your* neighbor is on the street, then one would say my evidence is "mediate" or "indirect.") Some recent philosophers have called attention to this misuse of words without trying to understand the distinction which the words are (mis)used to express. The distinction may be illustrated as follows.

If I do see that my neighbor is on the street, and if you ask me in good faith, "What makes you think you see him?" I will reply by mentioning some *other* state of affairs that I know or see ("I saw him coming out of his house a while ago and I recognize that coat and hat.") My reply is an appeal to other propositions which may be taken as evidence for the assertion that was challenged. But to the questions, "What makes you think you *believe* that you are in your room?" and "What makes you think you *seem* to feel well?" I do *not* reply by expressing other propositions which are my evidence; the only kind of reply I can make (unless I reject the questions as inappropriate) is to say, "I just do, that's all." In the older terminology my knowledge of how I seem to feel, and of what it is that I believe, is "direct" or "immediate." In Miss Anscombe's terminology, such knowledge is "non-observational"; as she remarks, nothing *shows* me that I know such things. In the terminology of still other philosophers, we could say "it makes no sense" to speak of *knowing*, or of having *evidence* for, what is expressed by "I seem to feel well" and "I believe I'm in my room." But if these propositions cannot themselves be said to be known or to be evident, they are capable of *conferring* evidence, and whatever we do know must be consistent with them.

The class of intentional actions, Miss Anscombe says, is a subclass of the things that are "known without observation." Certainly my knowledge of what I *plan* to do and of what I *intend* to do is "non-observational." But we should not say, without qualification, that my knowledge of what I *am* doing is non-observational. If the lecture hall contains a hundred people, then in going there I am going to a place where there *are* a hundred people; but my knowledge of this action—my knowledge that I am going to a place where there are a hundred people—is not non-observational. And if I am headed for the lecture hall but, unknown to me, destined never to arrive, I may say, falsely, "I'm going to the lecture hall"; the statement is non-observational but, being false, it cannot express what I *know*. I can know non-observationally what I intend to do; but it is only through observation that I can know whether my intentions are to be successful or fulfilled. I suggest, therefore, that the relation between "non-observational knowledge" and "intentional action" might be described in this way: the class of things that we *intend* to do and the class of things we *think* we are doing are subclasses of the things we know without observation. But where our actions themselves are in question, it is always—or almost always—appropriate for one to say, "Observe what you're doing!" I think Miss Anscombe makes the same point. "By the

knowledge that a man has of his intentional actions [she writes] I mean the knowledge that one denies having if when asked e.g., 'Why are you ringing that bell?' one replies 'Good heavens! I didn't know I was ringing it!' " In saying that I know my present intentional actions non-observationally, Miss Anscombe would seem to mean, first, that I know non-observationally what it is that I *think* I am doing, and, second, that I know non-observationally, with respect to what I now think I am doing, what it is that I thereby *intend* or aim to be doing.

At times, Miss Anscombe tends to shy away from "know." She does not like the statement, "In the end, only I can know my own intentions." For what it means, she says, is simply this: "There comes a point where a man can say 'This is my intention,' and no one else can contribute anything to settle the matter. It does not mean that when he says 'This is my intention,' he is evincing a knowledge available only to him. I.e. here 'knows' only means 'can say.'" But this, it seems to me, is not illuminating. For the expression "can say," in this use, does not mean merely the ability to utter the words; anyone who can speak the language knows how to *say* "This is Jones's intention." We might refer explicitly to Jones's privileged access and say that only he "is in a position" to describe his own intention. But if we avoid such metaphors then, I think, the relevant use of "can say" must be described in terms that mean the same as "know" or "evidence."

Miss Anscombe's book also touches upon many topics that I have not mentioned. There are some important points concerning the logic of the statements in which we ordinarily express our intentions. And there is an excellent discussion of "practical reasoning" and the Aristotelian doctrine of the "practical syllogism."

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EXISTENTIALISM AND RELIGIOUS BELIEF. By DAVID E. ROBERTS. ROGER HAZELTON, editor. New York, Oxford University Press, 1957. Pp. viii, 344. $5.00.

This is a posthumous book. David Roberts left most of the manuscript complete at his premature death in January, 1955; the great omission was the absence of a general conclusion. Roger Hazelton has done a good editorial job with the material but he could not supply the essential summary and overall criticism which would

undoubtedly have comprised the concluding chapter had Roberts lived to write it. As he says (p. vii): "The brief introductory and concluding portions represent an effort on my part to rework and expand material written by Professor Roberts for other purposes, in so far as this could be brought to bear upon the theme of the present book." But I for one am not so sure that Roberts would have wanted this kind of introduction and conclusion. My advice to the reader is to omit reading both and to construct his own conclusion and introduction from Roberts's text.

The book as Roberts left it is, in my view, the best general account of Existentialism that now exists in the English language. The chapters on Pascal, Kierkegaard, Heidegger, Sartre, Jaspers, and Marcel are models of succinct summary, sympathetic comprehension, and relevant criticism. The subject matter is difficult: it cannot be conveyed to the English reader (this is especially true of Heidegger and Jaspers) without a real effort at rethinking the highly personal thought-forms and at reshaping the highly idiosyncratic styles of the originals. On the other hand the genuine contours of the authors' ideas have to be kept relatively sharp or else the whole will be strangely deformed. Here Roberts has done a wonderful job—not merely better but *far* better than any other English-writing commentator (cf. the bibliography of these on p. 342) and than most foreign ones. The Pascal and the two Kierkegaard chapters are not perhaps such remarkable feats as the ones on Heidegger and Jaspers but I know of nothing better in so few pages on Kierkegaard. The Heidegger and Jaspers sections are positively brilliant: Roberts never uses muddy or unclear English but goes straight to the heart of their philosophies.

I am of course tempted to discuss Roberts's treatment of each author, and the book in truth deserves such discussion. This the limits of space forbid. Let me therefore in what follows confine myself to the central problem—the light which Existentialism as a philosophical movement throws on religious belief. Roberts makes it clear that the light is—to say the least—oblique, even if in its way penetrating.

We can say, as a rough initial generalization, that the Existentialists each in his own manner protest against the dehumanization of man effected by most "rational" thought or, in short, by most previous philosophy and science as well as by present technology and technological civilization. To treat man as a function, a means, a thing among other things, an object among other objects, a counter for generalizations, a universal rather than a particular is to forget all about the actual agonized or joyful being whom we all know to some

degree by knowing ourselves. It is a curious fact that this central affirmation of Existentialism took so long to break through the crust of idealistic or positivist philosophy. But it seems, at least to me, very doubtful that we can ever go back to the unbroken crust. Here Roberts's book in its very sobriety of exposition is extremely convincing.

The great difficulty arises when the Existentialist philosophers try to go beyond their original insight (i.e., cease to be "anthropologists" or "psychologists") and construct an ontology or metaphysics. If reason cannot lead us to the truth about man or about "being," what can? To demand "Faith" at this point is to lose command of the situation, for there are many and contradictory faiths and some which from any "civilized" or "humane" standpoint (I leave the question-begging adjectives: the reader may grasp my shorthand) are truly horrible. Here I think Roberts is particularly admirable in not disguising the dilemma: Kierkegaard was mostly struggling with Hegel's system but, in rejecting it, he finally came to a quite irrational conclusion. Heidegger's *Being* is so obscure and the ethical criteria of his "authentic" existence so reduced that almost any kind of *decision* seems to be validated. Jaspers' *cyphers* and final "ship-wreck" are so deprived of rational reference that there seems no possibility of informed choice at all. Sartre is admittedly nihilistic, his "humanism" constructed out of "absurdity." Even Marcel makes faith or "inter-subjective presence" the condition of genuine humanity and existence.

Roberts here seems to be struggling for an answer to the dilemma. He did not really find it, though he surely would have written a more effective conclusion than the editor has supplied. I think myself that a "solution" can be sought by a reinterpretation of *reason* as that word has mostly been used, at least outside of Germany. Surely it is possible to think *rationally* about the particular without reducing it to the status of an anonymous "thing" or "object" whose sole function is to be an item in a generalization or universal. Indeed up to a point the Existentialists have thought rationally about it. Where they have in my view (and Roberts himself hints at this: cf. especially his discussion of Kierkegaard's view of history, pp. 85-89) missed the mark sadly is in their patent failure to take time or temporality seriously. For it is precisely the temporal or historical dimension which is unique and particularistic, where things happen only once even though some events may last a very long time and seem to uphold a constant environment. And in human history the event far transcends the neutrality of anonymous thinghood. Whether or not this temporal dimension has "meaning" is a question I cannot discuss here, but I

do not think it is a simply irrational question or one to be decided only by "faith." Unfortunately the Existentialists all seem in one way or another to negate or debunk true history or temporality: Kierkegaard's conception of Christianity was notoriously nonhistorical and Heidegger's authentic man reduces temporality to a false or unauthentic version of the structure of Existential decision (which has apparently no concrete temporal setting as any historical event must have). This is a strange attitude for Christians (Heidegger of course is not one) whose religion is the most resolutely historical of any on earth. I think Roberts shows clear signs in his book of getting at something like this. But I am afraid that the atmosphere at Union Theological Seminary was not especially congenial to it.

BROOKS OTIS

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BERTRAND RUSSELL: THE PASSIONATE SKEPTIC. A Biography by ALAN WOOD. New York, Simon and Schuster, 1958. Pp. 249. $3.50.

Russell is the most enjoyable of all modern philosophers: the qualities that enliven his writing—elegance, terseness, wit, and good humor—characterize the man himself. A popular biography is therefore bound to be entertaining. There are good pickings here for the connoisseur of anecdote: Russell three days old, as he "lifts his head and looks about in a very energetic way"; the small boy distrusting mathematics ("he wept bitterly over his first efforts to learn the multiplication table and began with a great dislike of algebra—he wanted to know what *x* and *y* really were, and thought his tutor knew but would not tell him"); Russell playing croquet with Logan Pearsall Smith and tennis with McTaggart (the only man he could beat at the game); wearing "glossy white starched collars which were the highest ever seen"; arguing with Whitehead and Mrs. Whitehead about Free Love ("Bertie, you're an *aristocrat*, not a gentleman"); receiving the O.M. from George VI ("On Russell, his only comment was: 'Queer looking man' "). There are also some fine photographs.

The late Alan Wood achieved a lively sketch of the external aspects of Russell's career. Much of the story is already familiar from Russell's own autobiographical essays (especially "My Mental Development" in the Schilpp volume and the radio talks assembled in *Portraits from Memory*); but Wood was able to quote from unpublished correspond-

ence and private papers. The judgments of Beatrice Webb and other friends are of especial interest.

The picture of Russell that emerges is enigmatic: one is left wondering whether one and the same person could be the Mr. Apollinax of Eliot's poem ("He laughed like an irresponsible foetus"), the trifler that Santayana's malice depicted, the hollow man rejected by Lawrence and Wittgenstein, and the object of so much devoted attachment on the part of his biographer and other friends. I would plump for the man of calm intelligence and abstract good will who smiles at us through the best of Russell's writing.

Russell has certainly had a talent for exasperating his associates and opponents: Lowes Dickinson called him "Cordelia" and Housman said, "If I were the Prince of Peace, I would choose a less provocative ambassador." A witty fox will always annoy a multitude of hedgehogs, and Russell could never resist an epigram. It was bad enough to have the habit of drawing valid conclusions from radical premises; to arouse the suspicion of lack of seriousness might have been fatal to his influence. But integrity and wit are not incompatible. Russell's cheerful skepticism and unabashed hedonism have been a bracing antidote to humbug.

Professional philosophers will be curious to see how Alan Wood presented Russell's philosophical opinions to the layman. The task may be insoluble—at any rate it is not solved here. It is inadequate to say that the "real significance of *Principia Mathematica*" consisted in its taking "the mystery out of mathematical knowledge" (p. 54); and no better to say that the theory of descriptions overthrew "The false assumption, exposed by Russell, . . . that one word must stand for one object" (p. 66). Here, and elsewhere in his comments on Russell's philosophy, Wood is a shaky guide. And I am sorry that his devotion to Russell's side of most arguments should have led him into unworthy denigration of Keynes, Wittgenstein, and others. But with all its limitations, the book is alive, and too good to be missed.

Cornell University MAX BLACK

THE PHILOSOPHY OF VALUE. By DEWITT H. PARKER. Preface by WILLIAM K. FRANKENA. Ann Arbor, The University of Michigan Press, 1957. Pp. x, 272. $5.00.

The manuscript of this book was left almost complete by the author at his death and has been prepared for the press by his colleague, William K. Frankena, who writes the preface.

The ambiguities of the term "value" Parker resolves by taking its use in the sense of "satisfaction" or "enjoyment" as central and insisting that all its other uses must be varieties of this. Thus "intrinsic value," or "the good" is "a joy-giving activity or passivity," or "the assuagement of desire" (p. 14) and its different kinds go under different names: "pleasure" for the sensual, "beauty" for the aesthetic, "blessedness" for the religious, "quiet satisfaction" for the moral (p. 8). "Beautiful," "pleasant," "right," "wrong," "ought," and "duty" are all terms referring to some kind of satisfaction or dissatisfaction, and Parker has no difficulty in showing that, thus understood, when used as predicates, they constitute no part of the scientific description of the subjects to which they are attached. Rather they communicate something about ourselves, as speakers, in relation to those subjects. Their function is emotive or, as Parker prefers to say, "volitional." "Value statements . . . are vectorial currents of feeling which overflow into expressive media and as such are neither true nor false" (p. 68). Ethical utterances are a special variety of such statements expressing commands of a kind which originate with religious leaders or other social innovators and, having been taken up by parents and teachers, have acquired an impersonal character from general acceptance. The value character of these commands arises from the fact that they express desires and induce desires to make a favorable response.

In Chapters V through VIII Parker offers much interesting psychological analysis of the types and conditions of "values" in this sense of satisfaction or enjoyment. Part of this, however, is, I think, misleading in speaking of satisfaction as the "objective" of desire in a way which obscures the fact that, in most end-directed activity the end-in-view is not the activity itself or any resultant feeling state, but some change in the external world or our relation to it. His analysis makes desire more egocentric than it really is.

The chief weakness of the theory, resulting from the fusion of several distinct uses of the word "value" under the one concept, is revealed most plainly in the discussion of "moral values." Ethical terms are "value" terms, and "value" terms are expressions of "assuagement of desire." "You ought to" must therefore be interpreted as equivalent to "We want you to," and "I ought to" as equivalent to an "I want to" that expresses a desire generated in response to such demands (p. 248). To maintain this position Parker is forced to assert that the keeping of laws and social rules becomes a duty only when the desires of others generate in response a desire to conform to them (p. 254). Apparently the way to decide which of two conflicting social demands is our duty

is to decide which of them, if any, we most want to fulfill; and if we don't want to fulfill a demand it cannot be our duty to do so! This is the sort of blunder that, fortunately, more recent analyses of the uses of "good" and "ought" are teaching philosophers to avoid.

A. CAMPBELL GARNETT

The University of Wisconsin

SANTAYANA'S AESTHETICS. A Critical Introduction. By IRVING SINGER. Cambridge, Mass., Harvard University Press, 1957. Pp. ix, 235. $4.75.

In this carefully wrought study, Irving Singer examines the basic tenets and presuppositions of Santayana's aesthetics and philosophy of art. He expounds in turn Santayana's views on the beautiful, the aesthetic, art, and criticism, rejecting each of these views and offering counter-views of his own. His main thesis is that the whole of Santayana's aesthetics rests upon his untenable epistemological distinction between essence and existence, and that, consequently, Santayana's aesthetics cannot be sustained.

Thus, the first part of his book deals with the essence-existence distinction. For Santayana, Singer says, the traditional distinction is made in logical and not ontological terms: essence and existence are not two kinds of things, one of which "subsists," the other of which "merely exists," but are distinctions of analysis: "The realm of essence is not another world; it is merely the qualitative dimension of the one we already live in" (p. 6).

Singer interprets Santayana's distinction between essence and existence as one between "the intuition of determinate but uninterpreted data and the interpretation of data thus intuited" (p. 15). Singer's refutation of this consists in his assertion that no datum of consciousness can be determinate without being interpreted. Every datum must be interpreted as a *something or other*, which necessarily involves classification and signification. Whittle away as we will, he says, we can never reduce experience to an "ultimate, rock-bottom, and wholly uninterpreted datum" (p. 20). Even in the simplest case—intuiting a patch of white—we must see it as a member of the class of white things and a sign of some thing or other. Without some minimal interpretation there would be no consciousness whatever. Thus, Santayana's "blank and timeless aesthetic trance," which depends on an intuition of an uninterpreted datum, is a mere fiction.

In Part II Singer argues at length that Santayana's doctrine of

essences leads him to an erroneous aesthetics in that it construes beauty as simple and indefinable; and defines aesthetic experience as an interest in a contemplated image or essence.

He begins by explaining that Santayana never attempted a definition of beauty but only a statement of the conditions under which it is experienced. "Beauty" is indefinable, like "Good," but neither is unconditioned. What Santayana does define is the *sense* of beauty as aesthetic appreciation. First, Santayana delineates the conditions for value in general which include consciousness plus some felt appreciation. Then he distinguishes between moral and aesthetic value, characterizing the latter as "good in itself." Next Santayana demarcates within the intrinsic and immediate (aesthetic) values ". . . a still smaller class of perceptions. . . . Now Santayana has reached the inner circle of his analysis. When we perceive beauty, he says, we perceive it as belonging to an object; the projection of our enjoyment out of ourselves and into the object constitutes the sense of beauty" (p. 41). Thus, beauty is the objectification of pleasure.

Singer takes issue with Santayana's "sense of beauty" by denying that the quality of beauty is a presupposition of aesthetic appreciation. We *can* define "beautiful" without bringing in any quality—indefinable or not—of beauty. "Beautiful" is a dispositional term, like "soluble." "To say that something is beautiful . . . is to say that it tends to, or has the capacity to, participate in aesthetic experience" (p. 52).

What, now, is the aesthetic experience? Singer identifies it with "intrinsically valuable." But the aesthetic is not, as Santayana would have it, a form of intuition, since the latter depends on essences, which Singer has already rejected. Instead, he argues, the aesthetic is an experience which is *satisfying*; any satisfying experience may be aesthetic; and any aesthetic experience may include what he calls "sensible, cognitive and emotive effects," once we recognize that there are no special aesthetic objects in Santayana's sense. Satisfaction, however, is only a necessary and not a sufficient condition of the aesthetic; there are no sufficient conditions, Singer says, for the aesthetic in the way, for example, that there are for the beautiful.

Part III deals with Santayana's philosophy of art. Singer discusses especially Santayana's famous trichotomy of materials, form, and expression. He interprets these as three elements in a work of fine art. Two of these—materials and form—contribute directly to beauty; expression contributes to beauty only indirectly, in combination with materials and form.

Singer rejects Santayana's doctrine that works of art have materials, organized into a pattern, and that nothing more is needed for an aesthetic experience although organized material is often expressive as well. Basic to the doctrine, he argues, is the essence-existence distinction, already dismissed. But there are other difficulties, the main one of which is that Santayana's theory does not do justice to the way in which the materials, form, and expressiveness of a work of art can be joined to produce a total aesthetic effect that is much larger than any narrow act of pure intuition. Works of art, Singer insists, can bring about emotional, sensible, and cognitive responses which, separately and in unison, can be aesthetic if they satisfy. Thus, we cannot talk about materials, form, and expression except in terms of their capacities to enter into the aesthetic experience. "As a *work of art* . . . the Cézanne has a capacity to give aesthetic experience" (p. 161).

Singer goes on to define the work of art. "To be a work of art an object must tend to provide the three types of aesthetic effects and in harmonious combination. By the harmonious combination of aesthetic effects I mean their organization into a satisfying totality. No production is beautiful as a work of art unless it has the capacity to provide a complex of aesthetic effects that are enjoyable as a whole" (p. 161). The elements of beauty thus are not components of physical objects but the aesthetic effects that participate in the experience of a work of art.

The final two chapters are concerned with greatness in art and with criticism. On the problem of greatness in art, Singer attributes to Santayana an early view to the effect that greatness in art must incorporate philosophical scope as well as suitable materials in their determinate forms; and also a later view that emphasizes lyrical adequacy rather than philosophical scope.

Neither view will do, Singer contends. Greatness in art, he counters, can be defined only in terms of the nature of a work of art; by his definition, then, greatness becomes a unity of the three kinds of aesthetic effects harmoniously combined. Thus, the more a work of art satisfies—produces sensible, emotive and cognitive effects in their cooperative unity—the greater it will be (p. 188).

On criticism Singer agrees with Santayana that it is "a reasoned appreciation of works of art," and that this conception of criticism entails a theory of value and morality. Santayana, Singer says, never resolved his dilemma of treating every successful act as morally justifiable or else of presupposing some objective moral standard.

Singer then goes on to provide his own moral standard for reasoned appreciation of works of art, one that he derives from his earlier definition of intrinsic value as satisfaction: in all cases, he says, choose that action that provides the greatest amount of satisfaction.

These are the main ideas of Singer's book. I have one fundamental criticism of them. It seems to me that he weakens his *total* case against Santayana by unnecessarily tying his own analyses and views to Santayana's. In his, I think, successful refutation of Santayana's answers to certain aesthetic questions, he never probes the questions themselves. Like Santayana, Singer accepts at their face value questions like, "What is immediate experience?" "What is aesthetic?" "What is the beautiful?" "What is a work of art?" "What is greatness in art?" construing them all as factual questions to which descriptively true answers or definitions can be given. Not once does he even discuss the possibility that his whole running debate with Santayana converges on *persuasive* definitions rather than on true-false statements about the natures of things. What Singer has actually done, I think, is to give very good reasons for rejecting Santayana's own (persuasive) definitions of basic aesthetic terms; he has not shown that his counter-definitions are *truths* about art, the aesthetic, the beautiful, or greatness in art. Instead, he has also proffered a series of (disguised) persuasive definitions, and I can find no good reasons for accepting his either. After all, these basic concepts are *not* descriptive; they are evaluative and, by their very use, are open and hence not amenable to any definition of the sort that Singer or Santayana offers as purportedly true statements about the nature of the aesthetic, the beautiful, a work of art, or greatness in art.

MORRIS WEITZ

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MAN SEEKS THE DIVINE. By EDWIN A. BURTT. New York, Harper & Brothers, 1957. Pp. xii, 561. $4.75.

The teacher of World Religions, Comparative Religions, and similar subjects, as well as his students, can be profoundly grateful for this book. Here is a presentation which avoids both the unintelligible lists of gunas, yogas, and avatars of traditional popular scholarship, and the breezy exposé tone of a Lewis Browne. Professor Burtt has successfully resisted the temptation to "cover the field." Confucianism, Taoism, Buddhism, Hinduism, Judaism, Christianity, and Islam are all treated, but within each there is a rather severe restriction of content, in

the interest of presenting what is covered so as to make effective contact with the concepts and concerns of the contemporary American reader. This interest is well served. For example, Nirvana is explained in such a way that one can imagine a reasonable man taking it as a life-goal; the Bhagavad-Gita is shown to be vitally relevant to the perennial problem of conflicts of duties; the differences between the Synoptic and Johannine pictures of Jesus are incisively related to different types of religion. But while seeking contemporary relevance, the book does not neglect idiosyncratic elements; the gunas are not overlooked. In fact, one of the most valuable features of the book is the care with which each religion is related to the cultural and intellectual peculiarities of the society from which it sprang. *Man Seeks The Divine* is set apart also from the usual text on Comparative Religion in its concern for its own methodological assumptions and in its *careful* delineation of a broad historical framework. Perhaps the most distinctive feature is a final chapter, "Religion Faces the Contemporary Scene," in which the author ventures to discuss the present status and prospects of religion on this planet; again, wisely, through a fairly detailed treatment of two important factors, Gandhi's religious philosophy and the development of psychotherapy.

Having delivered these accolades, I must go on to register the fact that the book has the weaknesses of its virtues. Its clarity and impact have been purchased at the price of exclusions, the most serious of which is foreshadowed by the opening pages:

> . . . only incidentally do I deal with religion as popularly practised, with its relics of magical rites, and its more or less superstitious beliefs. I have tried to understand and present each religion at its best—in the forms and teachings which express the most ideal insight that its founder achieved and communicated, as best he could, to his followers [pp. x-xi].

> . . . this is a *philosophical* exploration of religion. By using this adjective I mean that our study will not be concerned with the multifarious details of rite and ceremony, of ecclesiastical organization, of historical propagation and expansion, or even with the less central features of creed and theology. What we shall focus upon is the central idea, simple or complex, which reveals the distinctive genius of each religion as it emerges before us—the idea uniquely exemplified in the life and teaching of its founder, given form in the creed of his disciples, and systematically elaborated in the theologies by which keen minds have endeavored to make it persuasive [p. 13].

The book is faithful to this program. We are given the moral and social ideas characteristic of Confucianism, the metaphysics of Lao Tse and Sankara, the conception of God in the second Isaiah and the Koran, the Moslem emphasis on social equality, and so forth. But

rarely are we given even a hint as to the ways in which these concepts and ideals are reflected, or not reflected, in the daily religious activity of the ordinary man. The author does much to show us what it is to think like a Confucian, Buddhist, or Moslem (or at least like the supposed founders of these religions as portrayed in the canonical writings), but he has done little to give a sense of how an ordinary Confucian, Buddhist, or Moslem feels and acts in his daily round. This lack is most glaring in the section on China. We read in a standard work: "The religion of China may be summarily defined as a union of nature worship and ancestor worship. At the most remote time of which any record is preserved it appears fully systematised and regulated, and its character has remained substantially unchanged to the present day."[1] One would never suspect this from Burtt's account, which consists almost entirely of a (very penetrating) presentation of Confucian and Taoist moral, political, and metaphysical philosophy. It is true that "the very potent force of ancestral reverence, expressed especially in the seasonal and commemorative ancestral rites" (p. 133-134) is listed as one of the "main primitive survivals" in Chinese religion. But of nature worship and its elaborate rituals nothing is said, and no hint is given of the large place these rituals have played in the religious life of most Chinese down to the present century. The same stricture applies, in varying degrees, to the rest of the book. Throughout, one is given the impression that rite is a typically primitive phenomenon and that the sacramental approach to the divine is not open to a thoroughly civilized individual. Naturally this approach is least inadequate in the less ritualistic religions—Theravada Buddhism, prophetic Judaism, Islam, and Protestant Christianity. This partiality for the metaphysical and moral is also reflected both in the definition of religion finally arrived at (p. 456) and in the absence of "sacramental" from the list of types of civilized religion (pp. 462 ff.).

These omissions are not necessarily defects in the book. A one-volume treatment of so vast a subject must necessarily select. But it is important to realize what has been left out and to evaluate its significance. A ritualist like Jane Harrison would say that we cannot understand the theological ideas of a religion unless we see them in the ritual setting which gives them their function for the worshipper. Without going so far, I would insist that the provision of such a setting would deepen our understanding.

[1] G. F. Moore, *History of Religions* (New York, 1927), I, 6.

This is not a work of original scholarship, and specialists would doubtless take exception to the presentation at many points. But it would be hard to imagine a book which, within the limits here laid out, could give the novice a more penetrating insight into the basic ideas of the great religions.

WILLIAM P. ALSTON

University of Michigan

LES RAPPORTS DE L'ÊTRE ET DE LA CONNAISSANCE D'APRÈS PLATON. Par LÉON ROBIN. Publié par PIERRE-MAXIME SCHUHL. Paris, Presses Universitaires de France, 1957. Pp. 160. Fr. 720.

LA MÉTHODE ONTOLOGIQUE DE PLATON. Par MAURICE VANHOUTTE. Louvain, Publications Universitaires de Louvain, 1956. Pp. 194. Fr. 160.

Léon Robin was the chief French Platonist of the first half of the twentieth century, his main work being his *Théorie Platonicienne des idées et des nombres d'après Aristote* (1908). The present book is a version of a course of lectures which he gave at the Sorbonne during 1932-33, edited by his pupil Pierre-Maxime Schuhl. It consists of 25 "leçons," each about six pages long and apparently representing a whole lecture. After three lectures on the Cave, Robin pursues Plato's conception of the world of *opinion* through the middle and late dialogues for eleven lectures. Then he devotes eight lectures to Plato's conception of the world of *knowledge*, especially in the *Sophist*, 242-263. The last three lectures deal mainly with God and the soul.

The analysis is learned, serious, untiring, detailed, and eminently reasonable and respectable. The train of thought is sinuous but tenacious, dense, tough, and obscure. The sentences are long, with puzzling "ifs" and "whens" at crucial places. Here is a translation of a sample: "Plato's χώρα is an anticipation of Descartes' extension; if physical division therein is an equivalent of logical otherness, if otherness becomes externality, that is precisely because it presupposes above itself, not merely otherness, but some indivisible reality serving as its archetype, and because what properly constitutes its reality is, strictly speaking, this division itself, and the exclusiveness of the parts" (p. 75).

The "leçons" have no titles except their numbers, and little unity except that of having occupied one hour. They can begin with a conjunction, and they pass from one Platonic passage to another distant

one in disconcerting ways. There is no means of predicting or overseeing the train of thought, no table of contents except a mere list of numbers, no index, and no list of passages discussed. Nothing but plowing through will tell you that, for example, the "quinzième leçon" is where Robin deals with the general character of the Platonic Ideas and also where he deals with the first movement of the second part of the *Parmenides*. The book is too difficult and forbidding to be recommended except to those who are already both lovers and connoisseurs of Plato. They, however, can certainly find some interpretations of interest to them, especially concerning the Line and the Cave in the *Republic* and the central ontological parts of the *Sophist*.

M. Vanhoutte gives an account of Plato's theories about the methods by which we may pursue the highest knowledge. He proceeds solely by examining the methodological passages in the middle and late dialogues, explicitly refusing either to bring in the reports of Aristotle as Robin did, or to argue from the actual procedure of Plato's dialogues as Goldschmidt did. He finds that in the middle dialogues the right method is essentially the intuition or vision of the Ideas, and the attempts to bring in the hypothetical procedure of science as a means to this intuition are failures (p. 85). Each Idea is justified by its own intelligibility (p. 47), and necessarily constitutes a satisfactory result, not subject to revision (p. 93). There is no hierarchy once we are among the Ideas themselves; all hierarchy, all order and ascent, exist below the realm of Ideas (pp. 53, 77). The source of intuition is The Good, which is not itself an Idea (p. 63).

After the crisis of the *Parmenides*, however, Plato provisionally put the Ideas "into parentheses, along with all the mythological and mystical flavor that they convey with them" (p. 120). He now occupied himself with certain categories or abstract concepts or objects of definition (p. 99), which are not Ideas but are common both to Ideas and to sensibles (p. 90), and are to be grasped by the non-intuitive methods of synthesis and division. Although the *Phaedrus* is a middle dialogue according to Vanhoutte, he finds that the synthesis and division therein are already concerned with these concepts, not with the Ideas (p. 93).

Vanhoutte's style may be too Belgian for French taste, but it is pleasant and easy reading for an English-speaking reader. His thought is interesting and stimulating and judicious, and I can recommend this book to all who have an interest in the methodological side of Plato's philosophy. I must say, however, that Vanhoutte succeeds little better than previous interpreters in what is probably the impos-

sible task of making the methodological and ontological passages of the late dialogues into something that our minds can feed on today. His admirable effort confirms the theory that nothing useful emerges from the vast labor of synthesis and division in these pieces except the Aristotelian conception of genus and species which is now elementary to all of us, and that to offer an examination of them as a contribution to philosophical understanding is like offering an examination of Kepler's astrological views as a contribution to contemporary astronomy.

RICHARD ROBINSON

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GEORGE BERKELEY. University of California Publications in Philosophy, Vol. 29. Edited by S. C. PEPPER, KARL ASCHENBRENNER, and BENSON MATES. Berkeley, University of California Press, 1957. Pp. vii, 206. $4.00.

In this book are collected eleven lectures on Berkeley, delivered in 1953 to commemorate the bicentenary of his death, by eleven philosophers then either permanently or temporarily at the University of California. In subject matter the lectures are well spread over the strikingly wide field of Berkeley's own interests and of his interest to us. They are as little repetitive as could be reasonably expected, and not inconsistent among themselves except perhaps in some points of emphasis. Each lecture, however, is a detachable unit, and those whose topics are most broad and ramified suffer most from this circumstance. None is uninteresting, but some are more interesting than others.

It is particularly useful to have our attention called here, in three good pieces, to Berkeley's deep interest in, and usually acute reasoning about, mathematics, theology, and moral and political questions—useful because of our unhistorical inclination to overemphasize his character as a precursor of phenomenalism. Here too one should notice particularly John Myhill's lecture on the too little read piece *De motu*, in which he rightly discerns in Berkeley's philosophy of science many anticipations of Mach. The motives of Mach and of Berkeley were completely different; whereas, one might say, Mach's intention was to strengthen science by freeing it from metaphysical dead wood, Berkeley's was rather to put science in its place as having nothing to do with serious metaphysical and theological matters. Myhill makes this admirably clear. But I think that he is inclined to underestimate the degree to which Berkeley was actually hostile to

science. This is due perhaps to his restricting his attention to *De motu*. In the earlier *Principles* and *Dialogues* it seems to me clear both that Berkeley saw in the scientific "world-picture" the most odious and dangerous intellectual phenomenon of the time—it was what he most detested in Locke, who speaks often of objects as "machines"—and also that at that time he was quite prepared to say that much current scientific orthodoxy was worthless and absurd. In *De motu*, certainly, he retires from this risky position to the view that scientific doctrines are perfectly acceptable if rightly understood—understood, that is, as mere useful devices by which we may predict and in some measure control the course of our experiences. But even here he insists that they throw no light on "the nature of things"; and I think there is no doubt that his later view, while not involving him in open rejection of the assertions of scientists, is still thought of by him as anti-scientific—as exposing the humble, artificial, purely practical character of science, to be contrasted with the pretensions of scientists and their fellow-travelers. It may be true, as Myhill suggests, that Berkeley had "a respect for natural science"; but if so, it was the kind of respect which a prudent combatant feels for a deeply disliked but still formidable enemy. Myhill's good piece deserves particularly careful consideration because, as I believe, opposition at least to the influence of natural science was by far the most constant, characteristic, and pervasive of Berkeley's motives.

Another lively piece that may arouse some controversy is Benson Mates's boldly titled lecture "Berkeley Was Right." It may be suspected that Mates is in fact less eager to assert that Berkeley was right than that some of his recent critics have been wrong—wrong, namely, in purporting to find difficulty in understanding just what it is that Berkeley meant to assert. Mates holds that Berkeley was right "in rejecting the proposition that sometimes the immediate objects of perception (ideas, or sense-data, as they are nowadays called) continue to exist when they are no longer perceived," and that "certain sophisticated philosophers who are struggling with little success to adopt something they hopefully call 'common usage' " are unjustified in finding that rejected proposition obscure. These philosophers are apt to complain, with reason surely, that they do not know what is meant by "immediate objects of perception." Mates offers to defeat this complaint by employing the word "sense-data" as a mere "label" for sounds, tastes, colors, pains, and other things of that sort. On this showing, however, Berkeley was wrong. Bananas are not all tasteless until they are eaten, nor is an avalanche soundless unless it is heard.

It is not even clear that Mates really does employ the word "sense-data" in the way that he announces. For he says that "our data are the joint product of a number of factors always including certain states of the nervous system"; and (apart from the difficulty of making out just what "our" tastes or "our" colors could be) it is by no means clear in what sort of sense a color or a taste could be in part the *product* of any state of anyone's nervous system. Common usage is better, one may think, than no clear usage at all. Where, as here, what philosophical difficulties there are are due almost wholly to obscurity and imprecision, it seems unprofitable to pretend that all is luminously clear.

G. J. Warnock

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LIGHT AND ENLIGHTENMENT: A STUDY OF THE CAMBRIDGE PLATONISTS AND THE DUTCH ARMINIANS. By R. L. Colie. New York, Cambridge University Press, 1957. Pp. 162. $3.75.

Anybody who works on the history of British philosophy in the seventeenth century rapidly becomes conscious that he knows too little about the Netherlands. As Miss Colie writes in her preface: "Holland was a country and an idea to every thinking European of that century, considered sometimes as friend, sometimes as enemy, sometimes as David, sometimes as the philosopher's heavenly city" (p. ix). Yet although almost every seventeenth-century scholar makes some reference to the Arminians, or to Grotius, Limborch, and Le Clerc, the interrelation between Dutch and English thought—except, in some measure, as it affects the history of Protestantism—has never been adequately studied. *Light and Enlightenment* can best be described as a set of seven closely related essays on this theme, and, more specifically, on the links between Cambridge Platonism and Dutch Arminianism.

Beginning with a brief but useful sketch of Anglo-Dutch Arminianism, Miss Colie discusses in turn the life and work of Limborch and Le Clerc, the Cambridge-Platonic attitude to religious toleration, Dutch and British reactions to Descartes and to Hobbes, More's critique of Spinoza, the use made of that critique by Spinoza's Dutch opponents, the contrasting attitudes of Le Clerc and Bayle to Cudworth's vitalism. As no previous English-language scholar has done, she has examined in detail not only the valuable Dutch secondary sources but the correspondence between Cambridge and Dutch

thinkers which lies in the University library at Amsterdam. Thus she has illumined a dark corner of intellectual history; her book is required reading for scholars in the seventeenth-century field.

It would be pleasant to end on that note; unfortunately, neither Miss Colie's control over the English language nor her knowledge of the major figures in her study is of the same order as her assiduity and skill in disentangling historical relationships. On the first point, there are too many barely intelligible expressions, of the sort typified in "More and Cudworth, whose belief in education lay exactly in its strength to true religion" (p. 77), or "Limborch managed considerations of more topical significance" (p. 29). It is to be hoped that when she comes to write the further studies she promises us, Miss Colie will ask a candid friend to read her manuscript. She might also consult with advantage the "Block that metaphor!" paragraphs in *The New Yorker*.

On the second point, she writes, for example, that we look in vain to the Platonists for "a literal opposition to the Hobbist State" (p. 48), whereas in fact that opposition is the main theme of the lengthy final chapter in *The True Intellectual System*. Even more astonishingly, she describes More as recognizing "the error of atomism" in Spinoza's fifth proposition: that "there cannot exist in the same universe two or more substances having the same nature or attribute." That proposition is, most evidently, directed *against* atomism. Again, and this is a connected point, she remarks on several occasions (e.g., p. 92) that the Cambridge Platonists condemned Spinoza as "an Epicurean, an atomic atheist," when in fact, as she correctly notes on page 126, they saw in him rather a continuator of the very different, Stratonian tradition of atheism. Such examples could easily be multiplied. Thus one cannot look to Miss Colie for an adequate account of the points in dispute between Descartes, Spinoza, and Cudworth; the fact remains that she has provided us with a most useful guide to the Dutch historical and literary background.

JOHN PASSMORE

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NICOLAI HARTMANN AND ALFRED NORTH WHITEHEAD. A Study in Recent Platonism. By JITENDRA NATH MOHANTY. Foreword by HERMANN WEIN. Calcutta, Progressive Publishers, 1957. Pp. xl, 214. Rs. 10/- (18s.).

The subtitle is significant. This book is not a comprehensive study of Hartmann and Whitehead, but an analytic review of what each

of them had to say about "ideal being." The book opens with a sketch of the development of the notion of ideal being in recent philosophy, especially in Meinong and Husserl. There follow two expository chapters, on Hartmann and Whitehead respectively, a lengthy chapter entitled "A Critical and Comparative Study," and a very brief end piece stating Dr. Mohanty's conclusions. Four appendices deal with special topics. Unfortunately, there is no index.

For Hartmann, there are two primary "spheres" or "manners" of being, the real and the ideal, the latter comprising the objects of pure mathematics and the essences. He distinguishes also between two "moments" of being *(Sosein* and *Dasein)* and between six "modes" of being (possibility, actuality, necessity, and their opposites). The moments of being as well as the modes of being pertain to both real being and ideal being. (Thus there are, for example, both real *Dasein* and ideal *Dasein.*) But the moments and modes of the real differ in some ways from those of the ideal. (For example, in the sphere of the real, possibility is not "disjunctive": only the actual is possible. But in the ideal sphere there is room for disjunctive possibility). Something else again are the categories of being, to the investigation of which so much of Hartmann's work is devoted. Their status is not to be identified with that of ideal being. All these matters and others are gone into in some detail. As for Whitehead's views concerning ideal being, Mohanty begins with the doctrine of objects of the earlier studies in natural philosophy and works his way through the material concerning eternal objects in *Science and the Modern World* and *Process and Reality.*

Attention is directed to numerous similarities and differences between Hartmann and Whitehead. For example, both philosophers are said to employ a method of philosophizing which is in a broad sense phenomenological, "each trying to combine description and speculation" (p. 125). One of the more important differences between them is that for Hartmann the idealities are universals, while Whitehead is reluctant to make use of the universal-particular dichotomy in characterizing the eternal objects. What appears to be Mohanty's major critical thesis is this: Some of Hartmann's doctrines (especially the distinction between the modes of being of the real and those of the ideal) seem to require a quite sharp separation between the realms of the real and the ideal, implying that there can be, in the author's words, "an autonomous ontology of the real world" (p. 149). Yet Hartmann frequently talks as if such a radical separation were illegitimate. Whitehead, on the other hand, consistently, and rightly, "never

attempts to give an account of the real world as independent of the ideal" (p. 151).

Dr. Mohanty is a careful, scholarly, and sometimes subtle expositor. It is this that gives his treatise its usefulness, especially since it adds considerably to the very small body of literature in English on Hartmann. It does not contain—and evidently was not intended to contain —a fundamental examination of the notion of ideal being. This is perhaps the reason the book is somewhat lacking in cohesion.

W. E. SCHLARETZKI

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BOOKS RECEIVED

Connaissance et amour: Essai sur la philosophie de Gabriel Marcel. By Jean-Pierre Bagot. Paris, Beauchesne et ses Fils, 1958. Pp. 248. 1,450 frs.

Concerning Human Understanding: Essays on the Common-sense Background of Philosophy. By Nikunja Vihari Banerjee. New York, The Macmillan Company, 1958. Pp. 333. $ 6.75.

Aesthetics: Problems in the Philosophy of Criticism. By Monroe C. Beardsley. New York, Harcourt, Brace and Company, 1958. Pp. xv, 614. $6.95.

The Exploration of Time. By R. N. C. Bowen, New York, Philosophical Library, 1958. Pp. vii, 143. $6.00.

Pitagorici: Testimonianze e frammenti. By Maria Timpanaro Cardini. Firenze, La Nuova Italia, 1958. Pp. xix, 177. L. 2000.

Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit von Hegels Tod bis zur Gegenwart (1832-1932). By Ernst Cassirer. Stuttgart, W. Kohlhammer Verlag, 1957. Pp. 331. DM 29.-.

Lezioni sui fondamenti della matematica. Vol. I. By Francesco Cecioni. Padova, Casa Editrice Dott. Antonia Milani, 1958. Pp. viii, 145. L.1500.

Socrates, Man and Myth: The Two Socratic Apologies of Xenophon. By Anton-Hermann Chroust. Notre Dame, Ind., University of Notre Dame Press, 1958. Pp. xiv, 336. $6.75.

Aufgaben der Philosophie. Three essays by E. Coreth, O. Muck, and J. Schasching. Innsbruck, Verlag Felizian Rauch, 1958. Pp. 210. s. fr. 11.45; $3.30.

Combinatory Logic, Vol. I. By Haskell B. Curry and Robert Feys, with two sections by William Craig. Amsterdam, North-Holland Publishing Company, 1958. Pp. xvi, 417. Guilders 42.—; $11.25

Practical Reason and Morality. A Study of Immanuel Kant's *Foundations for the Metaphysics of Morals.* By A. R. C. Duncan. Toronto, Thomas Nelson & Sons, 1957. Pp. xviii, 182. $4.00.

Enciclopedia filosofica. Vol. III, LI-REI. Issued by Istituto per la Collaborazione Culturale, Rome. Firenze, Casa Editrice Sansoni, 1957. Pp. xix, 1942.

Enciclopedia Filosofica. Vol. IV, REL-Z-INDICI. Issued by Istituto per la Collaborazione Culturale, Rome. Firenze, Casa Editrice Sansoni, 1957. Pp. xix, 1964.

Estudios de historia de la filosofia. En homenaje al Professor Rodolfo Mondolfo. Fasciulo I. Tucuman, Argentina, Universidad Nacional de Tucuman, 1957. Pp. 381.

Spinoza and the Rise of Liberalism. By Lewis Samuel Feuer. Boston, The Beacon Press, 1958. Pp. xii, 323. $7.50.

Plato: An Introduction. By Paul Friedländer. Translated from the German by Hans Meyerhoff. New York, Pantheon Books, Inc., 1958. Pp. xxiii, 422. $5.00.

The Philosophy of Law in Historical Perspective. By Carl Joachim Friedrich. Chicago, University of Chicago Press, 1958. Pp. x, 253. $4.75.

Logic Machines and Diagrams. By Martin Gardner. New York, McGraw-Hill Book Company, Inc., 1958. Pp. ix, 157. $5.00.

L'Éthique à Nicomaque. By René Antoine Gauthier and Jean Yves Jolif. Louvain, Éditions Nauwelaerts, 1958. Pp. 95, 325. 240 frs. b.

I Cirenaici. Racolta della fonti antiche, traduzione e studio introduttivo. By Gabriele Giannantoni. Firenze, G. C. Sansoni Editore, 1958. Pp. 520. L. 6000.

The Universal Humanity of Giambattista Vico. By Alfonsina Albini Grimaldi. New York, S. F. Vanni, 1958. Pp. xiv, 271.

Studies in Jurisprudence and Criminal Theory. By Jerome Hall. New York, Oceana Publications, Inc., 1958. Pp. 300. $6.00.

An Analysis of Knowing. By John Hartland-Swann. New York, The Macmillan Company, 1958. Pp. 141. $3.50.

Filosofiska: Problemställningar. By Justus Hartnack. Stockholm, Svenska Bokförlaget, 1958. Pp. vi, 256.

What Is Philosophy? By Martin Heidegger. Translated with an Introduction by William Kluback and Jean T. Wilde. New York, Twayne Publishers, Inc., 1958. Pp. 97. $3.00.

Leviathan. Parts One and Two. By Thomas Hobbes. With an Introduction by Herbert W. Schneider. New York, Liberal Arts Press, 1958. Pp. xvii, 298. $1.00 (paper).

Krise der Freiheit: Hegel-Marx-Heidegger. By Jakob Hommes. Regensburg, Verlag Friedrich Pustet, 1958. Pp. 331. DM 18.— (cloth); DM 15.50 (paper).

Poetic Discourse. By Isabel C. Hungerland. University of California Publications in Philosophy, Vol. 33. Berkeley, University of California Press, 1958. Pp. v, 177. $3.00.

Il Pensiero Americano contemporaneo. Under the direction of Ferruccio Rossi-Landi. Vol. I: Filosofia, Epistemologia, Logica; Vol. II: Scienze Sociali. Milano, Edizioni di Comunita, 1958. Vol. I, pp. xii, 342. L. 4000; Vol. II, pp. xii, 392, L. 4000.

De mundi sensibilis atque intelligibilis forma et principiis. By Immanuel Kant. With a German translation. Hamburg, Felix Meiner Verlag, 1958. Pp. xvi, 104. DM 4.80 (paper); DM 7.20 (cloth).

Critique of Religion and Philosophy. By Walter Kaufmann. New York, Harper & Brothers, 1958. Pp. xvii, 325. $5.00.

Die Unmöglichkeit der Geisteswissenschaft. By Julius Kraft. Frankfurt am Main, Verlag öffentliches Leben, 1957. Pp. 132. DM 9.80 (cloth); DM 7.50 (paper).

Whitehead's Metaphysics: An Introductory Exposition. By Ivor Leclerc. New York, The Macmillan Company, 1958. Pp. xiii, 234. $3.75.

Medieval Thought from Saint Augustine to Ockham. By Gordon Leff. Baltimore, Penguin Books, Inc., 1958. Pp. 317. $.85 (paper).

Metaphysica operationis humanae. By J. B. Lotz. Analecta Gregoriana, Vol. XCIV. Rome, Pont. Universita Gregoriana, 1958. Pp. xxiv, 228.

The Unconscious: A Conceptual Analysis. A. C. MacIntyre. New York, The Humanities Press, 1958. Pp. ix, 100. $2.50.

A Study in Ethical Theory. By D. M. Mackinnon. New York, The Macmillan Company; London, Adam & Charles Black, 1958. Pp. vii, 280. $3.25.

L'être et l'esprit. By André Marc. Bruges, Desclée de Brouwer, 1958. Pp. 197. 132 fr. b.

Truth and Denotation: A Study in Semantical Theory. By R. M. Martin. Chicago, University of Chicago Press, 1958. Pp. xii, 304. $7.50.

Ethics and the Moral Life. By Bernard Mayo. New York, St. Martin's Press, Inc., 1958. Pp. viii, 238. $5.00.

Logic Workbook. By James Wilkinson Miller. New York, Oxford University Press, 1958. Pp. vii, 88. $2.25.

Landmarks in Logic. By Vol Molesworth. With a Foreword by W. H. C. Eddy. Sydney, The Law Book Co. of Australasia, Pty Ltd.; Thiensville, Wis., The Counting House Publishing Co., 1958. Pp. xvi, 140. 25/-; $3.15.

Diccionario de filosofía. By José Ferrater Mora. Buenos Aires, Editorial Sudamericana, 1958. Pp. 1481.

A Hundred Years of Philosophy. By John Passmore. London, Gerald Duckworth & Co., Ltd., 1957. Pp. 523. 35s.

The Concept of Motivation. By R. S. Peters. New York, The Humanities Press, 1958. Pp. 166. $2.50.

Personal Knowledge towards a Post-Critical Philosophy. By Michael Polanyi. Chicago, University of Chicago Press, 1958. Pp. xiv, 428. $6.75.

Interpretazione di Schelling. Vol. I. By Giuseppe Semerari. Napoli, Libreria Scientifica Editrice, 1958. Pp. xxviii, 294. L.1800.

Ontologie du langage. By Gustav Siewerth. German text of *Wort und Bild* with a French translation, introduction and notes by Marc Zemb. Bruges, Desclée de Brouwer, 1958. Pp. 187. 104 fr. b.

Límites y contenido de la metafísica. By Pedro Sonderéguer. Buenos Aires, Editorial Americalee, 1956. Pp. 209.

English Philosophy Since 1900. By G. J. Warnock. London, Oxford University Press, 1958. Pp. ix, 180. 7s.6d.

Symbolism: Its Meaning and Effect. By Alfred North Whitehead. Barbour-Page Lectures, University of Virginia, 1927. New York, The Macmillan Company, 1958. Pp. viii, 88. $2.50.

History of Ancient Philosophy. By W. Windelband. Translated by Herbert Ernest Cushman. New York, Dover Publications, Inc., 1958. Pp. xv, 393. $1.85 (paper).

101 Puzzles in Thought and Logic. By C. R. Wylie, Jr. New York, Dover Publications, Inc., 1958. Pp. 128. $1.00 (paper).

Opus epistolarum Des. Erasmi Roterodami. Vol. XII. Edited by P. S Allen. Indices compiled by Barbara Flower. New York, Oxford University Press, 1958. Pp. iv, 189. $6.75.

The Golden Number and the Scientific Aesthetics of Architecture. By M. Borissavlievitch. With preface by Louis Hautecœur. New York, Philosophical Library, 1958. Pp. 91. $4.75.

The Absurdity of Christianity and Other Essays. By Archibald Allan Bowman. Edited, with an Introduction, by Charles W. Hendel. New York, Liberal Arts Press, 1958. Pp. xxxiii, 62. $.75 (paper).

The Inward Morning: A Philosophical Exploration in Journal Form. By Henry G. Bugbee, Jr. With an introduction by Gabriel Marcel. State College, Pa., Bald Eagle Press, 1958. Pp. 232. $5.00.

History of the Later Roman Empire: From the Death of Theodosius I to the Death of Justinian. In two volumes. By J. B. Bury. New York, Dover Publications, 1958. Vol. I: Pp. xxv, 471; Vol. II: Pp. ix, 494. $2.00 per volume.

L'Estetica e la religione di Benedetto Croce. By Alberto Caracciolo. Genova, Paideia, 1958. Pp. 215. L.1500.

Continuing Liberal Education: A Two-Year Report, 1955-1957. White Plains, Fund for Adult Education, 1958. Pp. 95.

Tibetan Yoga and Secret Doctrines or *The Seven Books of Wisdom of the Great Path.* Arranged and edited by W. Y. Evans-Wentz. New York, Oxford University Press, 1958. Pp. xliii, 389. $6.75.

The Pious Scientist: Nature, God and Man in Religion. By James K. Feibleman. New York, Bookman Associates, 1958. Pp. 111. $3.00.

Her Personal Magnetism. By Jettie Irving Felps. Boston, Meador Publishing Company, 1958. Pp. 126. $2.00.

Pope's Common Sense. By Jettie Irving Felps. Boston, Meador Publishing Company, 1958. Pp. 123. $2.00.

Goethe's Faust. Part One. Newly translated by Bertram Jessup. New York, Philosophical Library, 1958. Pp. 224. $3.75.

The Promise of Modern Life: An Interrelational View. By D. W. Gotshalk. Yellow Springs, The Antioch Press, 1958. Pp. xii, 116. $2.50.

A Course in Modern Linguistics. By Charles F. Hockett. New York, The Macmillan Company, 1958. Pp. xi, 621. $7.50.

Zen Buddhism. By Christmas Humphreys. New York, The Macmillan Company, 1958. Pp. xiii, 241. $3.75.

Epic and Romance: Essays on Medieval Literature. By W. P. Ker. New York, Dover Publications, Inc., 1958. Pp. xxiv, 398. $1.95 (paper).

The Credo of Maimonides. By Carol Klein. New York, Philosophical Library, 1958. Pp. x, 143. $3.75.

Ein Brief über Toleranz. By John Locke. English Text accompanied by German Translation and Notes by Julius Ebbinghaus. Hamburg, Felix Meiner, 1957. Pp. lxiii, 135. DM 5.40 (paper); DM 7.80 (cloth).

Discovering the Real Self. By E. F. McDaniel. New York, Philosophical Library, 1958. Pp. viii, 117. $3.75.

Awakening to the Good—Psychological or Religious?: An Autobiographical Inquiry. By Claire Myers Owens. Boston, The Christopher Publishing House, 1958. Pp. 273. $3.75.

Preparation of Teachers for Secondary Schools. A Report of the Committee on Teacher Training of the National Council of Independent Schools. Boston, National Council of Independent Schools, 1958. Pp. 52.

Letters to My God. By Dagobert D. Runes. New York, Philosophical Library, 1958. Pp. 58. $2.00.

On Christian Doctrine. By St. Augustine. New York, Liberal Arts Press, 1958. Pp. xxii, 169. $.95 (paper).

Man in Search of Immortality. By Charles R. Salit. New York, Philosophical Library, 1958. Pp. 185. $3.50.

ESP and Personality Patterns. By Gertrude Raffel Schmeidler and R. A. McConnell. With an Introductory Note by Gardner Murphy. New Haven, Yale University Press, 1958. Pp. xiii, 136. $4.00.

Tao Teh King. By Lao Tzu. Interpreted as *Nature and Intelligence* by Archie J. Bahm. New York, Frederick Ungar Publishing Co., 1958. Pp. 126. $2.25 (cloth); $.85 (paper).

Sonnets of a Philosophuncule. By Jacob Hugo Weinschenk. Fresno, Calif., Ficetum Press, 1958. Pp. 73. $2.50.

Man's Ultimate Commitment. By Henry Nelson Wieman. Carbondale, Southern Illinois University Press, 1958. Pp. x, 318. $5.95.

Letters From the Saints: Early Renaissance and Reformation Periods from St. Thomas Aquinas to Bl. Robert Southwell. Compiled by Claude Williamson. New York, Philosophical Library, 1958. Pp. x, 214. $6.00.

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